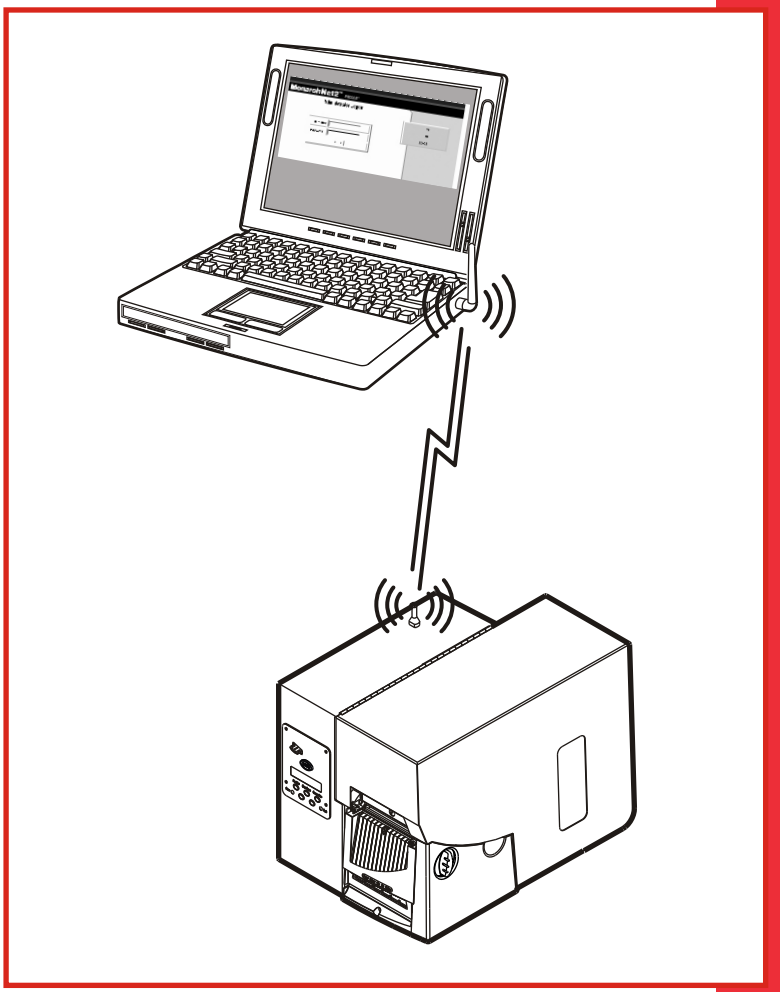
MonarchNet2™ Operating Instructions

Monarch® 9855® and 9860™ Printers



AVERY DENNISON

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TABLE OF CONTENTS

GETTING STARTED.....1-1

Overview 1-1

Audience 1-1

Using This Manual.....1-2

System Requirements 1-2

Supported Operating Systems.....1-3

Supported Network Protocols.....1-3

Setting Up the Print Server.....1-4

Checking the Print Server Hardware.....1-5

Verifying Successful Installation 1-6

About “Print Mode Ready” 1-8

Printing a Configuration Label.....1-9

CONFIGURING THE 802.11B/G AND IP SETTINGS 2-1

Saving Settings.....2-2

MAC Address 2-2

IP Address.....2-3

Subnet Mask.....2-4

IP Gateway.....2-5

Boot Method 2-6

Wireless 2-7
Signal Strength 2-8
SSID 2-9
Wireless Mode 2-10
A-Point Density 2-11
Transmit Rate 2-12
Channel 2-13
Default Network 2-14
Factory Defaults 2-15
Test Label 2-16
NCL Settings 2-17
USING A WEB BROWSER 3-1
Logging In 3-2
Configuring the Printer 3-4
Changing the Printer Setup 3-5
Changing the System Setup 3-7
Reset/Initialize Network 3-8
Configuring the Network Settings 3-9
Changing TCP/IP Settings 3-10
Changing SNMP Settings 3-12
Changing Wireless Settings 3-14
Setting Alerts 3-18
Receiving An Alert 3-19
Reading the Virtual Panel 3-20
Using Custom Commands 3-21
Changing the Password 3-22
Updating Firmware 3-24
Basic Security Configurations 3-25

CONSOLE COMMANDS 4-1
Conventions 4-2
Accessing Telnet Console Mode 4-2
Help Commands 4-4
General Commands 4-6
Setup Commands 4-11
RFID Commands 4-16
802.11b/g Wireless Commands 4-16
TCP/IP Commands 4-20
SNMP Commands 4-23
Using the Network Packet 4-24
USING THE SMART RELAY SYSTEM 5-1
Initial Smart Relay Setup Procedures 5-2
About the Primary Printer 5-2
About the Partner Printer 5-3
Connecting the Printers 5-4
Configuring the Partner Printer 5-5
Using the Smart Relay Telnet Commands 5-5
About the Smart Relay Counter 5-7
TROUBLESHOOTING 6-1
Printing a Test Label 6-1
General Troubleshooting Information 6-4
Troubleshooting Wireless Configuration Problems 6-7
Technical Support 6-7

SPECIFICATIONS **A-1**
802.3 Specifications A-1
Optional 802.11b/g Specifications A-1
Options A-2
GLOSSARY **G-1**
INDEX ..... **I**

GETTING STARTED

1

Your Monarch® 9855® or 9860™ Version 5.0 or greater printer contains MonarchNet2™ software, which allows you to access, configure, and control your printers with the Monarch® 7411™ Ethernet Print Server remotely across a LAN (local area network), WLAN (wireless local area network), or WWW (world-wide web) connection.

Information in this document supercedes information in previous versions. Check our Web site for the latest release and documentation information.

Overview

The Monarch® 7411™ Print Server lets you communicate with Monarch® printers on an 802.11b and 802.11g wireless network or wired Ethernet 802.3 network. 802.11b/g refers to 802.11b and 802.11g in this manual.

You can use the print server in Ad-Hoc (peer-to-peer) or infrastructure (access point) wireless mode. The print server operates at speeds of up to 54 Mbps on any IEEE 802.11b/g wireless compatible network. The wireless print server includes a dual-mode built-in wired Ethernet (802.3) connection so the print server automatically switches between wireless and wired Ethernet mode within the same subnet address. When switching between wired and wireless mode on different subnets, turn off the printer and then turn it back on to reinitialize the print server.

Refer to your network manuals for more information. This manual does not include information about setting up your wireless or wired network. **We recommend reviewing the terms in the glossary before you begin.**

Audience

This manual is written for the System Administrator who sets up printers on the network and is familiar with basic networking principles.

Using This Manual

Following is a summary of the contents of this manual:

	Chapter	Contents
1	Getting Started	Information you should know before using the printer.
2	Configuring the 802.11b/g and IP Settings	Setting communications between your network and printer.
3	Using a Web Browser	Using your Web browser to configure and monitor your network printer.
4	Console Commands	Lists the supported console commands for your network printer.
5	Using the Smart Relay System	Explains how to configure a primary and partner printer.
6	Troubleshooting	Common problems and their solutions.
A	Specifications	Printer and radio specifications.
G	Glossary	Networking and printer terms and their definitions.

System Requirements

To use the print server for printing from a wireless network, you need an 802.11b/g wireless network. The wireless network consists of either of the following:

- An 802.11b/g wireless enabled computer printing straight to the printer
  (Ad-Hoc mode).
- An 802.11b/g wireless access point allowing wireless and wired Ethernet enabled computers to print to the print server (infrastructure mode).

To configure and print, you need the following:

1. The MAC address from the label of the print server (for example: 004017023F96).
2. Obtain the following information from your wireless network administrator:

- Wireless mode (infrastructure or Ad-Hoc).
- The SSID (service set identifier) for your wireless network.
- If you are using TCP/IP (recommended for Windows Networks) and are not connected to a DHCP server (for obtaining an IP address automatically), you need a unique IP address for the wireless print server (for example: 192.0.0.192) and a subnet mask. If the print server is not on the same IP subnet as the computers you are printing from, you need a router. A print server with an IP address of 192.0.0.192 will not be seen by a network looking for devices with a prefix of 10.1.xxx.xxx. A router (default gateway) address is optional.
- Wireless security settings.

Supported Operating Systems

The print server supports multiple network protocols for users with Microsoft® Windows®, Novell® NetWare®, NDS, and UNIX®.

Supported Network Protocols

- TCP/IP:
  LPD/LPR
  BOOTP
  DHCP
  HP JetDirect™
  Raw TCP/IP (port 9100 or any chosen port)
  NetWare (NEST)
  NetBIOS over IP (with SMB)
  NetBEUI
  DLC
- Telnet
- RSH or REMSH (remote shell)
- WINS
- DHCP
- FTP
- SNMP

All protocols are simultaneously active.

Setting Up the Print Server

For MonarchNet2 to operate, make sure the print server is set to use the printer's **internal parallel port** and use **bi-directional communications**.

If this is not already set for you:

1. From the printer's Main Menu, select **Setup**, **Port Settings**, **Parallel Comm.**, **Port**, and press ← or → until you see Internal. Press **Enter/Pause** to save the setting.

2. Then, press → to display Mode. Press **Enter/Pause**. Press ← or → until you see IEEE1284. Press **Enter/Pause** to save the setting.

3. Press **Escape/Clear** until you see the Main Menu.

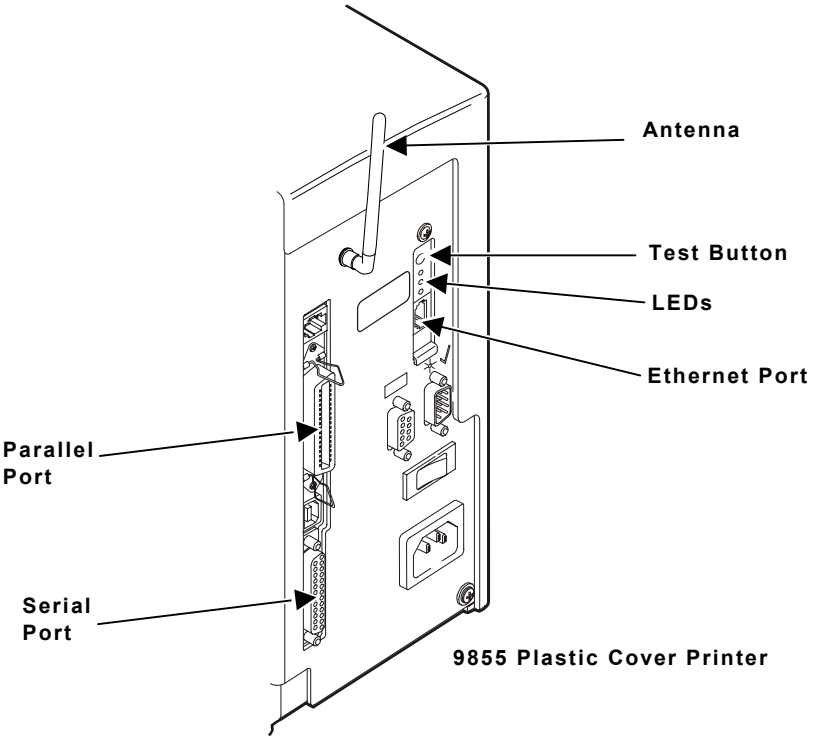
Note: MonarchNet2 uses the printer's internal parallel port.

You can switch between MonarchNet2 and using the parallel port, but you must set the Port to External and the Mode to Compatible. Then, turn off the printer and turn it back on to detect the cable. MonarchNet2 is not available until you disconnect the parallel cable and change the Port to Internal and Mode to IEEE1284.

The serial and USB port are still active. However, allow a two-second delay when switching from one port (serial, Ethernet, or USB) to another.

Checking the Print Server Hardware

The Ethernet print server comes preinstalled and tested in your printer.



Verifying Successful Installation

When the printer is turned on, the print server runs through a set of power-up diagnostics for a few seconds. All three LEDs blink momentarily. Then, the LEDs indicate the following activity:

LED Indicators		Status
Orange	solid	printer is on
	blinking	error
	off	printer is off
Yellow	solid	Ethernet link (wired 10baseT)
	blinking	network activity
	off	no Ethernet connection
Green	solid	Ethernet link (wired 100baseTX)
	blinking	network activity
	off	no Ethernet connection
Yellow & Green	solid	wireless link
	blinking	network activity
	off	no wireless connection

Test Button	Press this button down for less than five seconds to print a configuration label on the printer. The label shows the current wireless and network settings of the print server. See "Printing a Configuration Label" for more information. If the label does not print, see Chapter 6, "Troubleshooting." Press this button down for 10 seconds to reset the password to "access." To reset the print server to its factory default parameters, see "Default Network" for more information.
LED Status Indicators	The orange light comes on when the printer is turned on. The yellow light comes on solid when an Ethernet link (wired 10baseT) is established. The green light comes on solid when an Ethernet link (wired 100baseTX) is established. Both the yellow and green lights come on solid when a wireless link is established. The lights blink during network activity.
Antenna	A rugged 802.11b/g compatible antenna, mounted on the back of plastic-cover printers or on the top of metal-cover printers.

About "Print Mode Ready"

When you turn on your printer, you may see several different "Print Mode Ready" screens based on your printer's current configuration.

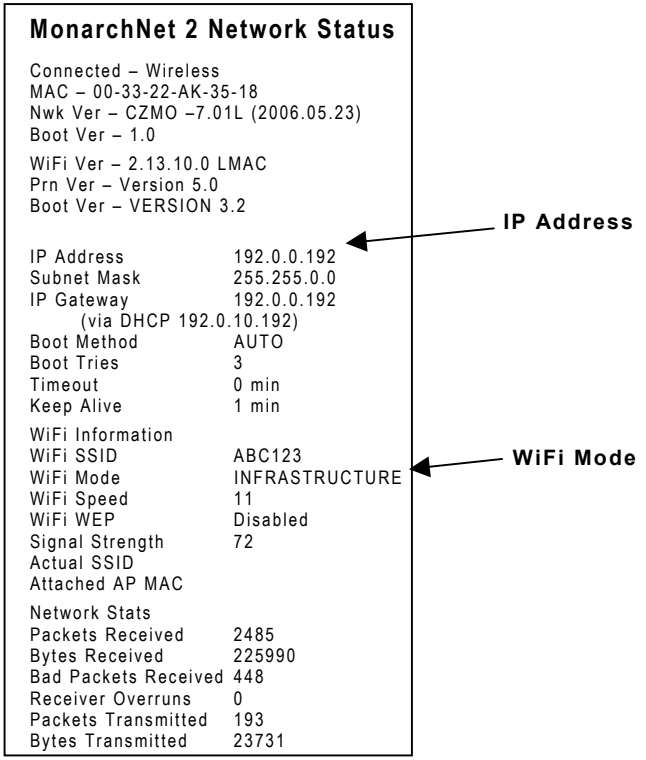
When you see	Description
Print Mode Ready	The printer is ready to accept data, but it does not have a print server with a MonarchNet2 connection.
∓ Print Mode Ready	A connection is established between the Ethernet print server and the MonarchNet2 protocol. It may take a minute or more before a **wireless** connection is associated between the print server and the access point.
N Print Mode Ready	A connection is established between the Ethernet print server and the MonarchNet2 protocol. It may take a minute or more before a **wired** connection is associated with the Ethernet print server and the network.

The boxes on the display indicate the signal strength of the connection between the printer and access point. This is an approximation and should be used for reference. For example, these boxes ▮▮▌ indicate of signal strength of approximately 80 percent.

Printing a Configuration Label

To print a configuration label, press the Test button on the back of the print server.

Use 6-inch long supply. If you are using supply that is shorter than six inches long, temporarily change your Supply Type in the printer menu to "continuous" to print the entire test label. After printing the test label, change your supply type to your previous setting. Some information may print outside the label edges of narrow supply.



At the printer, you can also print a network/wireless test label (third test label), which lists the IP address, subnet mask, etc. See Chapter 6, "Troubleshooting," for more information.

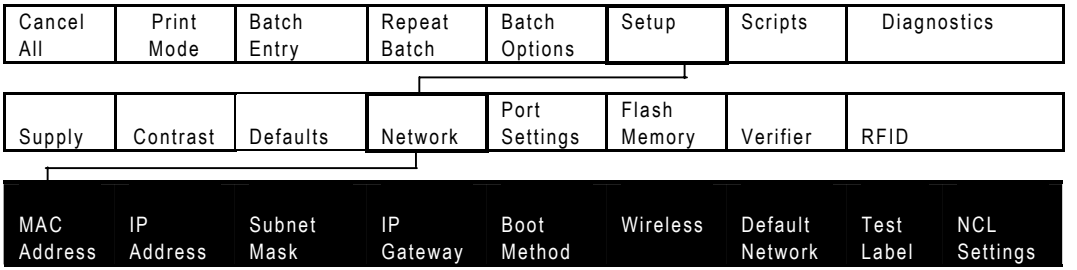
CONFIGURING THE 802.11b/g AND IP SETTINGS

2

This chapter explains how to configure and view your network settings by using the printer's Main Menu. You can set the MAC address, IP address, subnet mask, IP gateway, boot method, wireless information, and default network. *If the printer is not communicating with the print server's network card, the Network Menu options do not appear.*

All nodes of a wireless network need to have the same settings to communicate with each other. We recommend reviewing the terms in the glossary before you begin.

Main Menu



The options are listed in the table below.

Option	Choices	Default
MAC Address	View only	None – preset value
IP Address	xxx.xxx.xxx.xxx	192.0.192.0
Subnet Mask	xxx.xxx.xxx.xxx	0.0.0.0
IP Gateway	xxx.xxx.xxx.xxx	0.0.0.0
Boot Method	Auto/Static/BOOTP/DHCP/RARP	Auto
Wireless	See "Wireless" section	N/A
Default Network	Default Setting/Factory Default	N/A
Test Label	Yes/No	No
NCL Settings	Reinit NCL/Get First NCL	None

Saving Settings

After you display the option you need, press **Enter/Pause** to save the setting. Press **Escape/Clear** to exit to the next higher menu. If you save any network or wireless options, the print server resets and uses the new settings. It may take a minute or more, depending on network traffic, for the print server to reset and connect to the network. "**Please wait**..." is displayed while the print server resets and is connecting to the network.

Note: Whenever you press **Escape/Clear**, you lose all previous entries you have made since the last time you pressed **Enter/Pause**.

Make sure to inform your System Administrator if you change any settings. *Keep a record of each of your network printer's settings in a safe place.*

MAC Address

The Media Access Control (MAC) Address is a hard-coded value that cannot be changed (like a serial number). It consists of four 3-digit numeric fields, usually separated by periods. The MAC address of the print server is located on the label of the printer server.

Note: If the printer is not communicating with the print server's network card, the Network Menu options do not appear.

To view the MAC address, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

NETWORK MAC Address →

2. Press **Enter/Pause**. The current setting is displayed, for example:

MAC Address 000123ABC321

3. Press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

IP Address

The IP (Internet Protocol) Address is a unique identifier for a device on a network. It consists of four 3-digit numeric fields, separated by periods.

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

   ```
        NETWORK
   ←    IP Address      →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
        IP Address
        192.0.192.0
   ```

3. Press ← or → to move through the positions. Press **Feed/Cut** to scroll one digit at a time from 0-9. After you display the option you need, press **Enter/Pause**.

   For example, to change the IP address from 192 to 000, press ← or → to highlight the first position and press **Feed/Cut** until you see 0, then press → to select the next position and press **Feed/Cut** until you see 0, then press → to select the next position and press **Feed/Cut** until you see 0. Press **Enter/Pause** to save the setting or press **Escape/Clear** to exit without saving.

   If you enter a series of digits greater than 255 for any segment of the IP address and press **Enter/Pause**, the printer does not save the setting. However, no error appears on the display. Correct the IP address and then press **Enter/Pause** to save the setting.

4. Press **Escape/Clear** until you see the Main Menu.

Subnet Mask

IP networks are divided using subnet masks. The subnet mask address determines where the IP address belongs in the network.
It consists of four 3-digit numeric fields..

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

   ```
   NETWORK
←  Subnet Mask  →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   Subnet Mask
   255.255.000.000
   ```

3. Press ← or → to move through the positions. Press **Feed/Cut** to scroll one digit at a time from 0-9. After you display the option you need, press **Enter/Pause**.

   For example, to change the subnet mask from 192 to 000, press ← or → to highlight the first position and press **Feed/Cut** until you see 0, then press → to select the next position and press **Feed/Cut** until you see 0, then press → to select the next position and press **Feed/Cut** until you see 0. Press **Enter/Pause** to save the setting or press **Escape/Clear** to exit without saving.

   If you enter a series of digits greater than 255 for any segment of the subnet mask and press **Enter/Pause**, the printer does not save the setting and no error appears on the display. Correct the subnet mask and then press **Enter/Pause** to save the setting.

4. Press **Escape/Clear** until you see the Main Menu.

IP Gateway

The IP Gateway (or router) allows connections (communications) between different subnets on a network. It consists of four 3-digit numeric fields.

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

   ```
   NETWORK
←  IP Gateway  →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   Gateway Address
   010.192.000.000
   ```

3. Press ← or → to move through the positions. Press **Feed/Cut** to scroll one digit at a time from 0-9. After you display the option you need, press **Enter/Pause**.

   For example, to change the Gateway Address from 192 to 000, press ← or → to highlight the first position and press **Feed/Cut** until you see 0, then press → to select the next position and press **Feed/Cut** until you see 0, then press → to select the next position and press **Feed/Cut** until you see 0. Press **Enter/Pause** to save the setting or press **Escape/Clear** to exit without saving.

   If you enter a series of digits greater than 255 for any segment of the Gateway Address and press **Enter/Pause**, the printer does not save the setting and no error appears on the display. Correct the Gateway Address and then press **Enter/Pause** to save the setting.

4. Press **Escape/Clear** until you see the Main Menu.

Boot Method

The boot method sets the way the device receives its IP address. The choices include Auto, Static, BOOTP, DHCP, and RARP.

Auto Tries DHCP, BOOTP, and RARP, then sets to Static if the IP address is not automatically set using any of the previous methods.

Static Use if your network uses fixed configuration. The IP address remains the same every time the device connects to the network.

BOOTP The device broadcasts its hardware address and the MAC address and the BOOTP server responds with the IP address.

DHCP The network automatically assigns IP addresses within a specified range to devices when they are first turned on. A device could have a different IP address every time it connects to the network.

RARP The device sends a RARP request and the RARP server responds with an IP address. The device knows its MAC address and the server responds with the IP address.

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

	NETWORK
←	Boot Method →

2. Press **Enter/Pause**. The current setting is displayed, for example:

	BOOT METHOD
←	BOOTP →

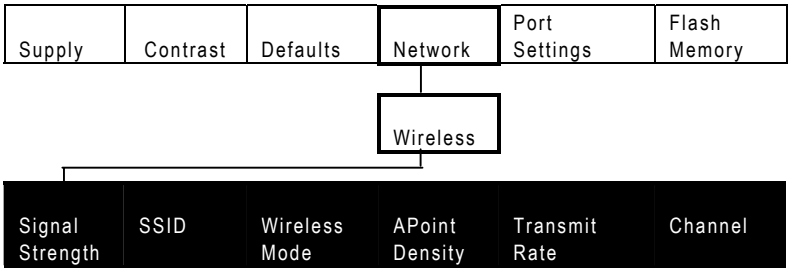
3. After you display the option you need, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

Wireless

Using the Wireless Menu, you can view the signal strength, set the Service Set Identifier (SSID), wireless mode, A-Point density, transmit rate, and channel.

Note: All nodes of a wireless network need to have the same settings to communicate with each other. We recommend reviewing the terms in the glossary before you begin.



The options are listed in the table below.

Option	Choices
Signal Strength	0 to 100
SSID	xxxxxxxxxxxxx
Wireless Mode	Infrastructure or Ad-Hoc
APoint Density	Low/Med/High
Transmit Rate	1/2/5.5/11/12/18/24/36/48/54
Channel	1 to 11

Signal Strength

The connection between the device and access point is shown as signal strength, which is a percentage from 0 to 100, where 0 is no connection and 100 is an excellent connection. A percentage below 30 indicates you may be experiencing interference or are close to being out of the access point's range. With a percentage below 50, printing performance could be affected. If the signal strength is low, increase the number of retries. To improve the signal strength, try moving the printer closer to the access point and away from other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-gigahertz cordless phones.

Note: If the printer is not communicating with the print server's network card, the Network Menu options do not appear.

To view the signal strength, from the Main Menu: Select **Setup**, **Network**, **Wireless**. Then follow these steps.

1. Press ← or → until you see

   ```
   WIRELESS
   Signal Strength →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   Signal Strength
   100
   ```

3. Press **Escape/Clear** until you see the Main Menu.

SSID

The Service Set Identifier (SSID) is a unique identifier that must match for all nodes on a subnetwork to communicate with each other. It consists of up to 32 characters (any printable character, including spaces). If using the space character, it must be enclosed in quotation marks.

Note: The SSID is case-sensitive.

To change the setting, from the Main Menu: Select **Setup**, **Network**, **Wireless**. Then follow these steps.

1. Press ← or → until you see

   ```
        WIRELESS
   ←    SSID      →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
        SSID
        ABC1234
   ```

3. Press ← or → to move through the positions. Hold **Feed/Cut** to scroll quickly through the characters from 0-9;A-Z;a-z or press **Feed/Cut** once to scroll one character at a time. After you display the character you need, press **Enter/Pause**. You must press **Enter/Pause** *after each character* to save the change and continue.

   To clear the SSID, press ← and → at the same time when you are at the end of the SSID field. If you are in the middle of the field and you press ← and → at the same time, any characters to the right of the cursor are cleared.

Note: If using the Monarch® 9860 printer with the attached Monarch® 939 keyboard, you may simply enter the SSID you need using the numeric keys and press **Enter**.

4. Press **Escape/Clear** until you see the Main Menu.

Wireless Mode

The wireless mode sets how you communicate with your wireless network.

In Ad-Hoc mode, you do not need an access point. Ad-Hoc mode is also called peer-to-peer (point-to-point) communications, so as long as the devices are in range, they will connect and communicate with each other.

Infrastructure mode requires an access point to communicate.

Note: If communicating in a mixed environment where both Ad-Hoc and infrastructure mode are used, make sure the SSIDs are unique in both modes.

From the Main Menu: Select **Setup**, **Network**, **Wireless**. Then follow these steps.

1. Press ← or → until you see

   ```
   WIRELESS
←  Wireless Mode  →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   WiFi Mode
   Ad Hoc          →
   ```

3. Press ← or → to change the setting. After you display the option you need, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

A-Point Density

The A-Point density is the access point's density. If the communication quality (transmit rate) between devices on a network drops below a certain level, the devices scan for another access point in the area offering better transmit rates, etc. The range is Low, Medium, or High.

If set to High density, the device searches for another access point in range using 11 Mbps communications; Medium uses 2 to 5.5 Mbps communications; Low uses 1 to 2 Mbps communications.

From the Main Menu: Select **Setup**, **Network**, **Wireless**. Then follow these steps.

1. Press ← or → until you see

   ```
     WIRELESS
   ← APoint Density →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
     APOINT DENSITY
     Low            →
   ```

3. Press ← or → to change the setting. After you display the option you need, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

Transmit Rate

The transmit rate sets the maximum speed at which the devices communicate with each other on the network. The speeds are in Mbps (megabits per second). Choices include: 1, 2, 5.5, 11, 12, 18, 24, 36, 48, or 54. The transmit rate is negotiated with the access point and this setting may be ignored.

From the Main Menu: Select **Setup**, **Network**, **Wireless**. Then follow these steps.

1. Press ← or → until you see

   ```
   WIRELESS
←  Transmit Rate  →
   ```

2. Press **Enter/Pause**. The current setting is displayed, for example:

   ```
   TRANSMIT RATE
   1              →
   ```

3. Press ← or → to change the setting. After you display the option you need, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

Channel

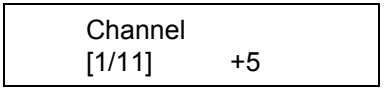
This option selects the channel on which your network devices communicate. All devices must be on the same channel to communicate. Other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-gigahertz cordless phones may operate on the same channel as your network. Channels 1-11 are available. Use the channel for Ad-Hoc mode. In infrastructure mode, the channel is negotiated with the access point and this setting is ignored.

Note: Make sure all network devices are set to the same channel.

From the Main Menu: Select **Setup**, **Network**, **Wireless**. Then follow these steps.

1. Press ← or → until you see

2. Press **Enter/Pause**. The current setting is displayed, for example:



3. Press ← or → to change the setting. After you display the option you need, press **Enter/Pause**.

4. Press **Escape/Clear** until you see the Main Menu.

Note: If you have problems connecting to your network, change the channel to at least three channels lower or higher than any other wireless networks within range.

Default Network

The default network option allows you to reset the print server to default settings or factory default settings.

- If you select default setting, any defaults set using the **SET DEFAULT** Telnet console command are restored.
- If you select factory default, the print server is reset to factory defaults. See "Factory Defaults" for the list of default values. When the print server is reset to factory defaults, you must reconfigure all your specific network settings, including IP address, SSID, etc.

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

   ```
     NETWORK
   ← Default Network
   ```

2. Press Enter/Pause.

   ```
     Default Network
     Default Setting →
   ```

3. After you display the option you need, press **Enter/Pause**. The print server is reset to your defaults or factory defaults.

4. Press **Escape/Clear** until you see the Main Menu.

5. Turn off the printer and turn it back on to initialize the factory settings.

Note: Depending on your printer's boot method, the IP address may be automatically assigned when you turn on the printer. The new IP address may not be the same as the previous one.

Factory Defaults

If you reset the print server to factory defaults, the following values are restored. **Some settings may stay the same, depending on your network configuration.**

Description	Default
MAC	This value is hard-coded and does not change
TCP/IP	Enabled
Name	PXR_xxxxxx (xxxxxx = the last six digits of the MAC address.)
IP Address	*
Subnet Mask	*
IP Gateway	*
Boot Method	*
Boot Tries	3
Timeout	0 min
Keep Alive	1 min
SSID	<none>
LPD banner	Disabled
LPD retries	Disabled
Port	X1
TCP port	9100
WiFi Mode	infrastructure
Speed	54
Actual SSID	“discover any AP set for broadcast”
Encryption	Disabled
Authentication Type	Open System
AP density	Low
International Roaming	Flexible
Regulatory Domain	USI (United States, Indoor)

* May keep previous values based on network configuration.

Test Label

You can print a configuration label if your print server does not have a test button. The label is best-displayed using 2" wide by 4" long labels. If the label is too small, some information may print outside the label edges.

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

   ```
   NETWORK
←  Test Label
   ```

2. Press **Enter/Pause**.

   ```
   Test Label
   No              →
   ```

3. Press → to display "Yes" and press **Enter/Pause**. The configuration label prints.
   See "Printing a Configuration Label" earlier in this manual for a sample label.

NCL Settings

The Network Control Language files (NCL) are in a readable format similar to Microsoft® Windows® 3.0 initialization (.ini) files. For example, you can create an NCL file that sets your printer to specific settings every time you turn on the printer, such as black mark supply, high energy ribbon, and on-demand mode.

Use Reinit NCL to process the NCL file saved in the printer's flash memory. An NCL file exists in flash memory if the word "NCL" appears on the first test label's right side.

Use Get First NCL to process the first (initial) configuration file. This file can be configured to mimic factory default settings.

For more information about NCL, refer to the *Network Control Language Programmer's Manual*.

To change the setting, from the Main Menu: Select **Setup**, **Network**. Then follow these steps.

1. Press ← or → until you see

NCL Settings
Reinit NCL →

2. Press **Enter/Pause**.

Are you sure?
No →

3. Press → to display "Yes" and press **Enter/Pause**.

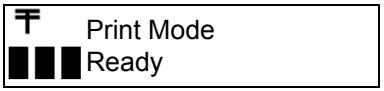
USING A WEB BROWSER 3

You can configure and manage the printer and print server using your Web browser: Microsoft® Internet Explorer, version 6.0, or greater; Netscape® Communicator, version 4.7 or greater; or Mozilla Firefox®.

Notes:

- The screen pictures shown in this manual may not exactly match the software.
- The recommended screen area resolution for your computer is 1024 x 768 pixels.
- Before you begin, you need to know your printer's IP address. The printer should be turned on and ready to receive data.

It may take a minute or more, depending on network traffic, for the print server to connect to an access point. When the printer is connected to an access point, you see

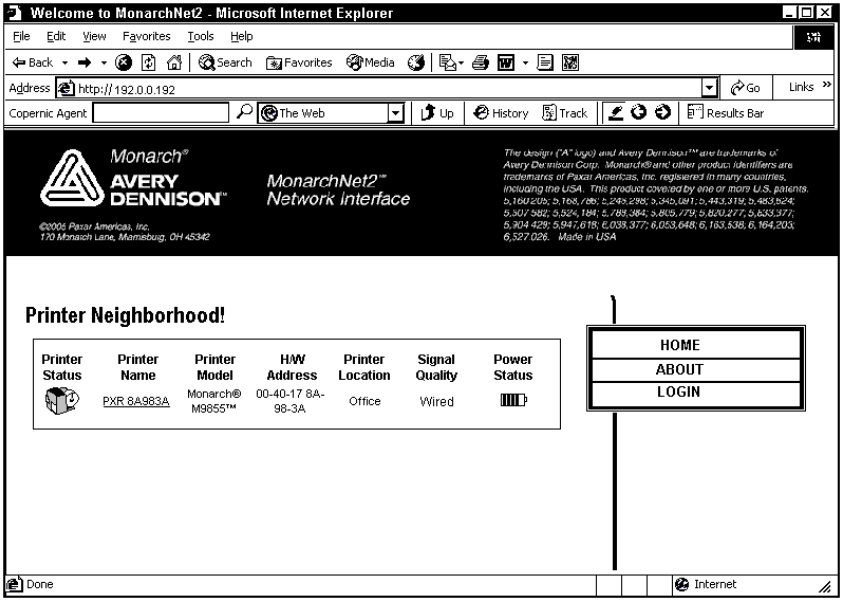


The printer is connected and ready to receive data.

Logging In

1. Start your Web browser.

2. Type in your printer's IP address and press **Enter**. For example, 192.0.0.192.

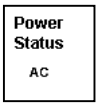


The printer's display shows the "N" network symbol or the antenna symbol when the printer is connected and ready to receive data.

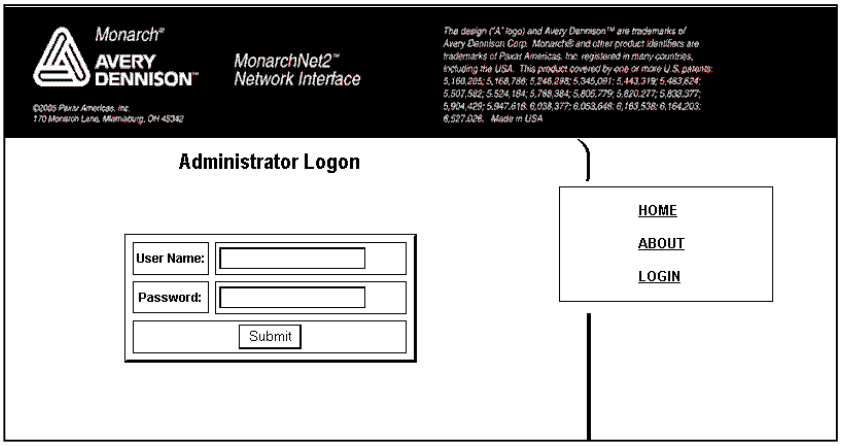
If the printer is experiencing a ribbon or supply problem, this graphic appears with a red background for Printer Status.

If the printer has a wireless connection, this graphic appears for Signal Quality.

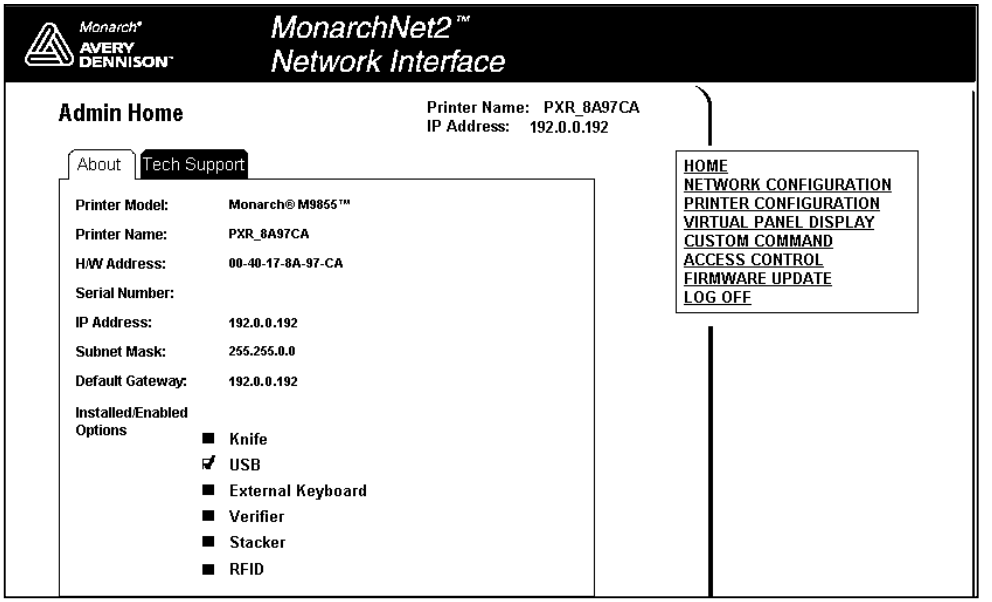
If the printer has an AC power connection, this graphic appears for Power Status.



3. Click **Administrator Log On** or the printer's name (for example: PXR8A983A).



4. Type **access** for the password and click **Submit**. You do not need a user name. The password is case-sensitive and saved in the printer's flash memory. See "Changing the Password" to change the password.

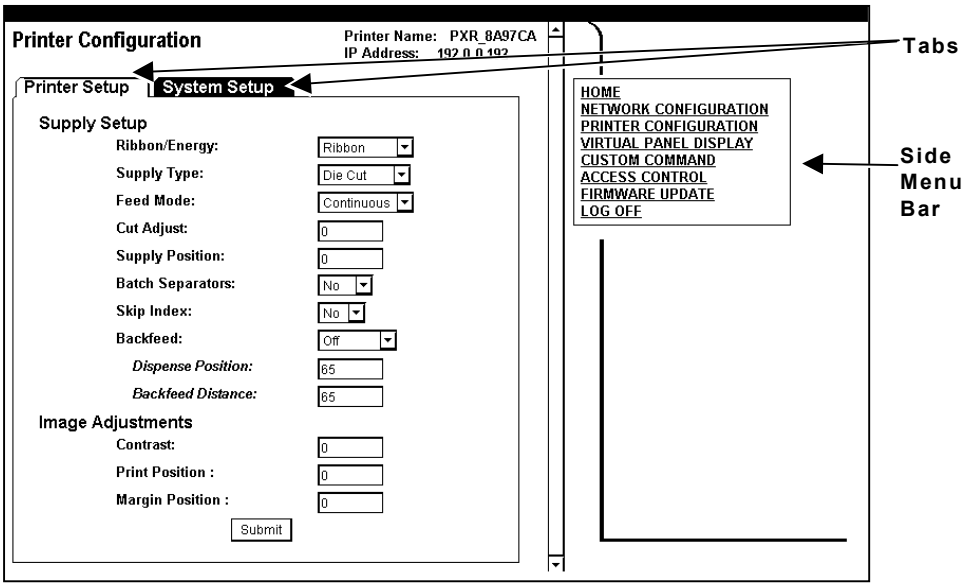


The About tab appears with information about your printer, including printer name, IP address, installed/enabled options, and more. Click the Tech Support tab if you need to contact us.

Configuring the Printer

You can configure the printer using your Web browser.

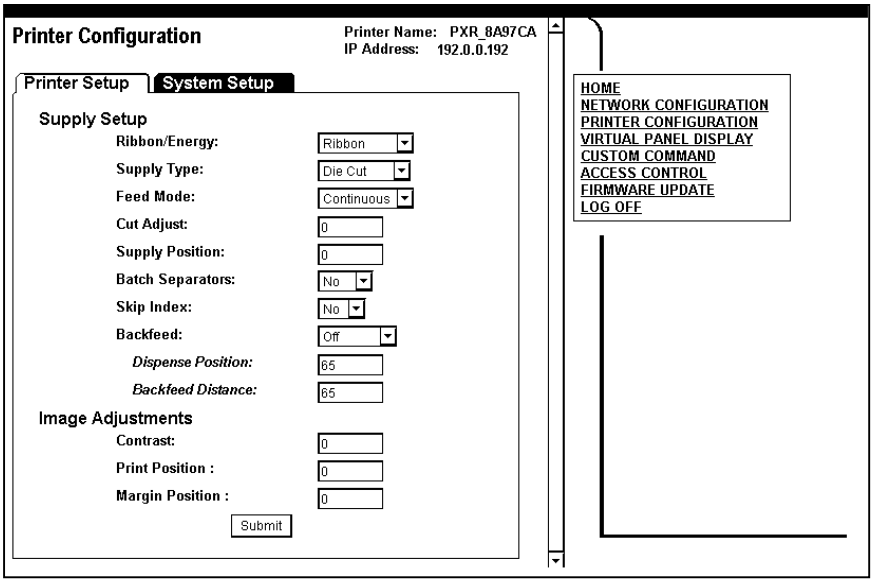
1. From the side Menu Bar, click **Printer Configuration**.
2. Select one of the following tabs: **Printer Setup** or **Supply Setup**.



Changing the Printer Setup

Only configure the settings required for your network/printer.

Note: Only the available options for your printer are displayed.



1. On the **Printer Setup** tab, set the **Ribbon**: None, Ribbon, or High Energy.

2. Set the **Supply Type**: Aperture, Die Cut, Black Mark, or Continuous.
   If you are using edge aperture supplies, use the die cut setting.
   If you are using center aperture supplies, use the aperture setting.

3. Set the **Feed Mode**: Continuous or On Demand.

4. Enter a value for the **Cut Adjust** (Position). The range is –300 to 300. This adjusts where the tag is cut.

5. Enter a value for the **Supply Position**. The range is –300 to 300. This adjusts the printer to print at the vertical 0,0 point.
   Only adjust on initial printer setup.

6. Set the **Batch Separators**: No, Yes, or Long.

7. Set the **Skip Index** mode: No or Yes. Skip index allows you to print an image over multiple labels.

8. Set the **Backfeed**: Off, On, or Extended. Backfeed advances each printed label to the specified dispense position and then backs up the next label to be printed underneath the printhead. **Do not use extended backfeed on non-knife printers.**

9. Enter a value for the **Dispense Position** (range is 50 to 200). This adjusts the stopping point of the label *after* it is printed.

10. Enter a value for the **Backfeed Distance** (range is 10 to 200). This is the amount to move the label backwards *before* printing.

11. Enter a value for the **Contrast** (range is –699 to 699). This adjusts the darkness of printing on the supply.

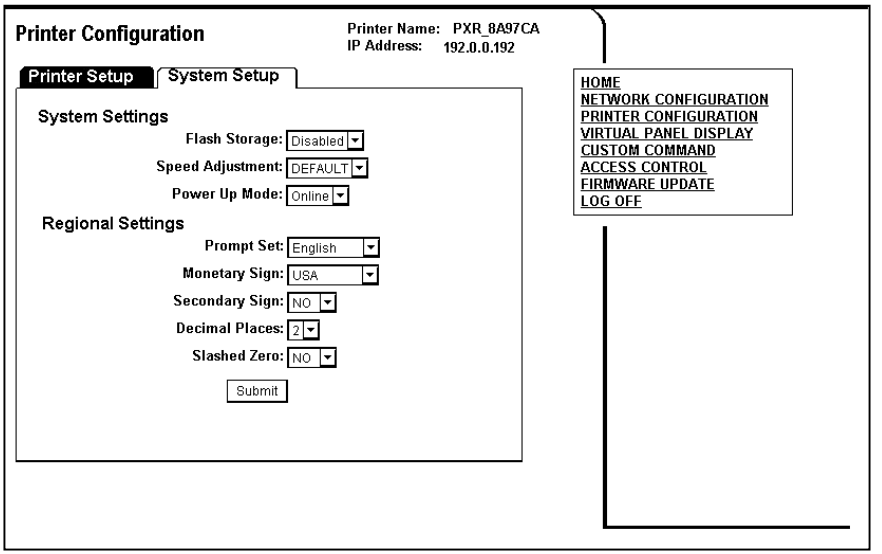
12. Enter a value for the **Print Position** (range is –450 to 450). This adjusts where data prints vertically on the supply.

13. Enter a value for the **Margin Position** (range is –99 to 99). This adjusts where data prints horizontally on the supply.

14. Click **Submit** when finished.

Changing the System Setup

Only configure the settings required for your network/printer.



1. On the **System Setup** tab, set the **Flash Storage**: Enabled or Disabled. Flash storage allows packets with "R" or "N" selectors to be stored in Flash Memory, instead of volatile RAM. Packets stored in flash memory are saved when the printer is turned off.

2. Set the **Speed Adjustment**: Default, 2.5, 4.0, 6.0, 8.0 10.0, or 12.0 ips. If you select "Default," serial bar codes print at 2.5 ips; parallel bar codes print at 6.0 ips.

3. Set the **Power Up Mode**: Online or Offline.

4. Select the **Prompt Set**: English, French, German, Spanish-ES, Japanese, Portuguese, Italian, Swedish, Spanish-MX, Danish, Dutch, Finnish, or Norwegian.

5. Set the **Monetary Sign**: None, USA, UK, Japan, Germany, France, Spain, Italy, Sweden, Finland, Austria, India, Russia, Korea, Thailand, China, Euro-Dollar.

6. Set the **Secondary Sign**: No or Yes.

7. Set the number of **Decimal Places**: 0, 1, 2, or 3.

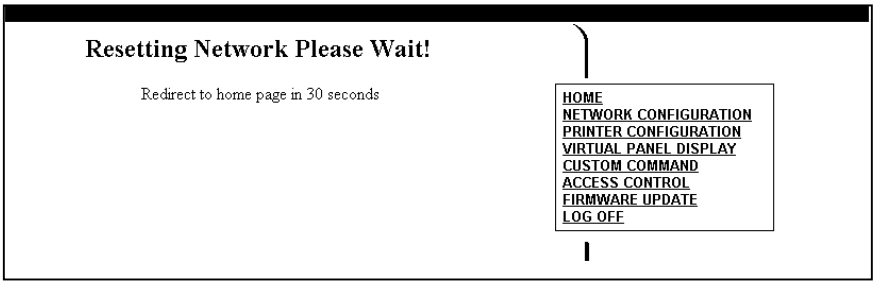
8. Select **Slashed Zero** to print zeros with a slash (Ø): No or Yes.

9. Click **Submit** when finished.

Reset/Initialize Network

Click **Save/Re-init Network** (on the **Protocols** tab) to reset and initialize the network interface. Any changes made on previous screens **do not** take effect until you click **Reset Network**.

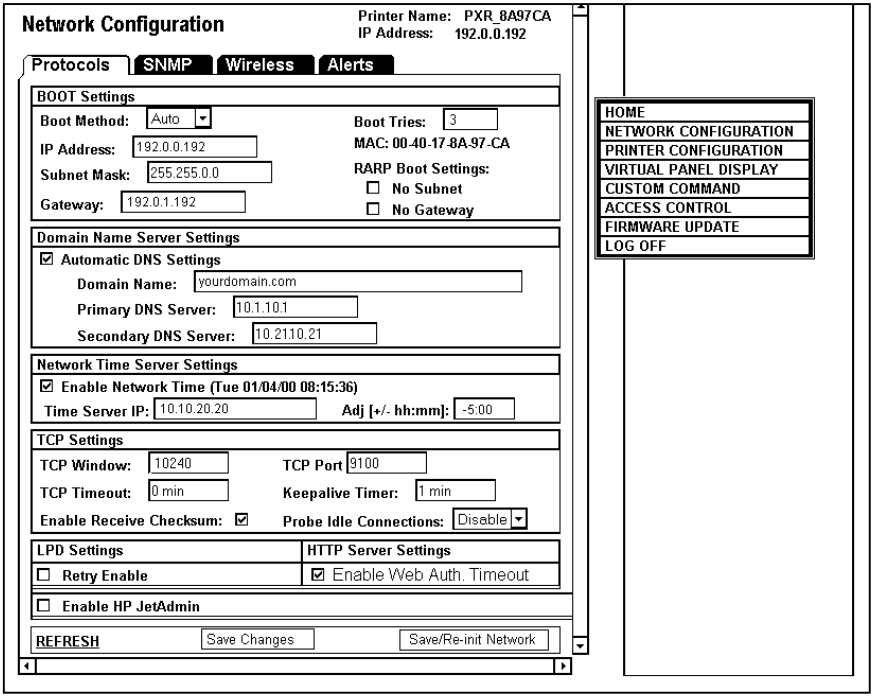
This process takes a few minutes for the printer to respond with the new settings.



Configuring the Network Settings

You can configure the print server to operate on your network.

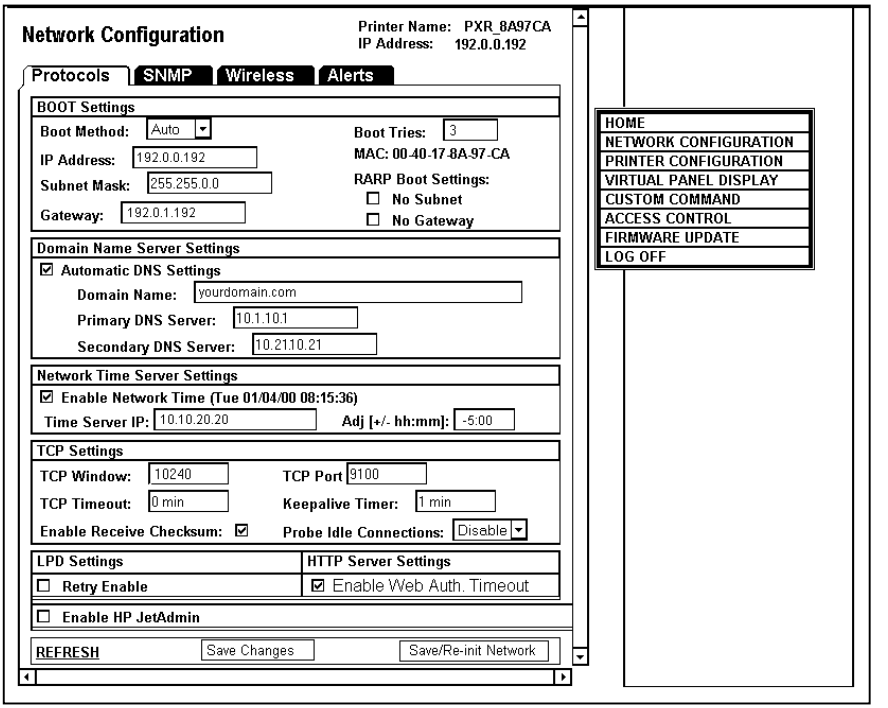
1. From the side Menu Bar, click **Network Configuration**.



2. Select one of the following tabs: Protocols, SNMP, Wireless, or Alerts.

Changing TCP/IP Settings

Only configure the settings required for your network/printer.



1. On the **Protocols** tab, set the **Boot Method**: Auto, BOOTP, DHCP, RARP, or Static.
2. Set the number of **Boot Tries**: 1-10. The default is 3. If you are having a problem receiving an IP address with BOOTP, set this number to 10.
3. Change the **IP Address** if necessary.
4. Set or change the **Subnet Mask**.
5. Set or change the **Gateway**.
6. Select either No Subnet or No Gateway for **RARP**.
7. Select **Automatic DNS Settings** to automatically configure the domain name settings.

8. Enter the **Domain Name**.

9. Enter the **Primary DNS Server's** IP address.

10. Enter the **Secondary DNS Server's** IP address.

11. Select **Enable Network Time** to enable the network time protocol, which allows the printer to query a time server on the network and synchronize the clock in the printer.

12. Enter the **Time Server's IP** address. The printer waits 20 seconds for the server to respond. The status is displayed within parentheses: "Waiting for Server," "Time Server Error," or the current date and time.

13. Enter the **Time Zone Adjustment** in hours and minutes, from Greenwich Mean Time (GMT). This offset varies by location and time zone. For example, Eastern/Standard time is five hours behind GMT. Use –5:00 for the offset. For an offset of 3.5 hours, use 3:30.

Note: Changes for Daylight Savings Time are not made automatically. If your time zone participates in Daylight Savings Time, change the time zone offset accordingly.

14. Set the **TCP Window**. 10240 is the default.

15. Set the **TCP Port**. Port 9100 is the default.

16. Set the **TCP Timeout** (in minutes). The default is 0, which is no timeout.

17. Set the **Keepalive Timer** (in minutes). The default is 1 minute.

18. Enable or Disable **IP Receive CheckSum** and **Probe Idle Connections**.

19. Select **Retry Enable** for LPD/LPR.

20. Select **Enable Web Authorization Timeout** to make the Web pages time out after five (5) minutes of inactivity.

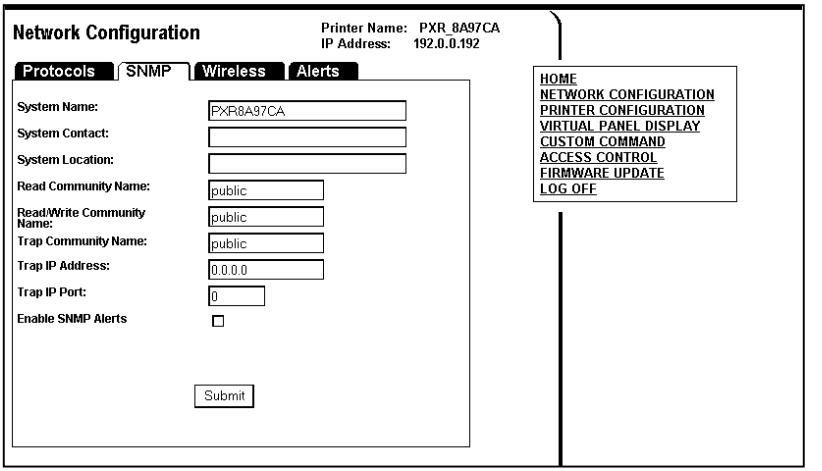
Note: The time out period is set for five minutes and cannot be changed.

21. Select **Enable HP Jet Admin** if using HP Jet Admin. No other settings are required for HP JetAdmin.

22. Click **Save Changes** to save changes or click **Save/Re-init Network** to save the changes and re-initialize the network with the new settings. Any changes made on this screen or other screens do not take effect until you click **Save/Re-init Network**.
This process takes a few minutes.

Changing SNMP Settings

Only configure the settings required for your network/printer.



1. Click the **SNMP** tab to change SNMP settings.

2. Enter the **System Name**, if it does not automatically appear.

3. Enter the **System Contact**.

4. Enter the **System Location**.

5. Verify the **Read Community Name** and change if necessary.

6. Verify the **Read/Write Community Name** and change if necessary.

7. Verify the **Trap Community Name** and change if necessary.

8. Enter the **Trap IP Address**, if it does not automatically appear.

9. Enter the **Trap IP Port**, if it does not automatically appear.

10. **Enable SNMP Alerts** if necessary. Set which alerts you need to receive. See "Setting Alerts" for more information.

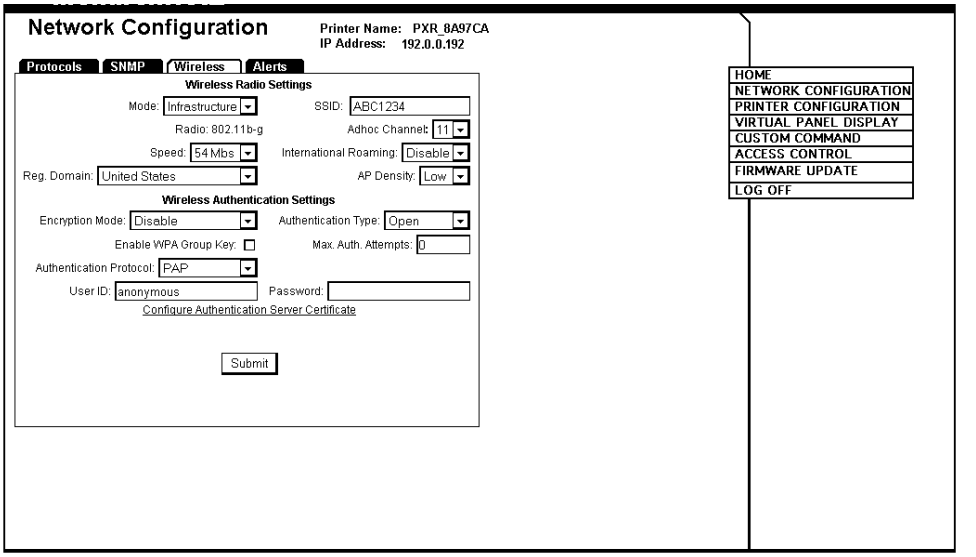
11. Click **Submit** when you are finished.

12. Click the **Protocols** tab.

13. Click **Save Re-init Network** (on the **Protocols** tab) before any changes take effect. Even though you submitted your changes on the previous screen, they do not take effect until you click **Save Re-init Network**. This process takes a few minutes.

Changing Wireless Settings

Only configure the settings required for your network/printer.



1. Click the **Wireless** tab to configure the wireless network (802.11b/g) settings.

2. Set the **Mode**: Ad-Hoc or infrastructure. In Ad-Hoc mode, you do not need an access point. Infrastructure mode requires an access point to communicate.

3. Set the **SSID**. The SSID is a unique identifier that must match for all nodes on a subnetwork to communicate with each other.

4. Select the **Radio** type: 802.11b or 802.11b/g.

5. Set the **Ad-Hoc channel**: 1 to 11. All devices must be on the same channel to communicate.

6. Set the **Speed**: 1, 2, 5.5, 11, 12, 18, 24, 36, 48, or 54 (megabits per second).

7. Set the **International Roaming**: Disable, Strict, or Flexible.

8. Set the **Regulatory Domain**, which is the country of use.

9. Set the **AP Density**: Low, Medium, or High. If the communication quality (transmit rate) between devices on a network drops below a certain level, the devices scan for another access point in the area offering better transmit rates, etc.

10. Set the **Encryption Mode**: Disable, 64 BIT Encryption, 128 BIT Encryption, WPA, WPA2, WPA2-WPA. WPA2-WPA works as either WPA2 or WPA. The encryption mode determines the algorithm used to encrypt messages.

11. Set the **Authentication Type**: Open, Shared, TLS, TTLS, LEAP, PEAP, EAP-FAST, or PSK. The authentication type specifies how users are identified and verified on a network. These options vary depending on what was selected as the Encryption Mode.
See "Basic Security Configurations" for more information.

12. **Enable WPA Group Key** to use a group key for data link encryption.

13. Enter the maximum number of **Authentication Attempts**.

14. Enter the **Pre-shared key**, which must be exactly 64 hex characters. If using a pass-phrase, it must be 8 to 63 displayable characters.

15. Set the **Authentication Protocol**: PAP, or MSCHAP_V2.
See "Basic Security Configurations" for more information.

16. Enter the **User ID**.

17. Enter the **Password**.

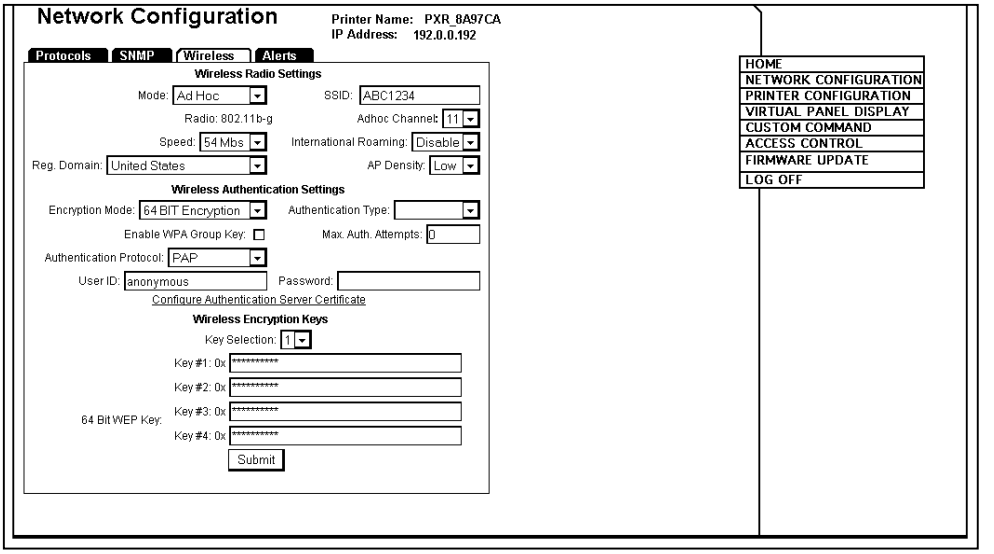
18. Click **Submit** when you are finished.

19. Click the **Protocols** tab.

20. Click **Save Re-init Network** (on the **Protocols** tab) before any changes take effect. Even though you submitted your changes on the previous screen, they do not take effect until you click **Save Re-init Network**. This process takes a few minutes.

Using WEP

If you select 64 BIT Encryption or 128 BIT Encryption, you need to enter the WEP keys.



1. Determine which **Key Selection** to use: 1-4.

2. Set the **WEP Key** values. You must use the same key values for devices to communicate with each other on the network.

Note: As you enter the values for the WEP keys, you can see the characters. However, the next time you view this tab, the values are displayed as asterisks (*).

3. Click **Submit** when finished.

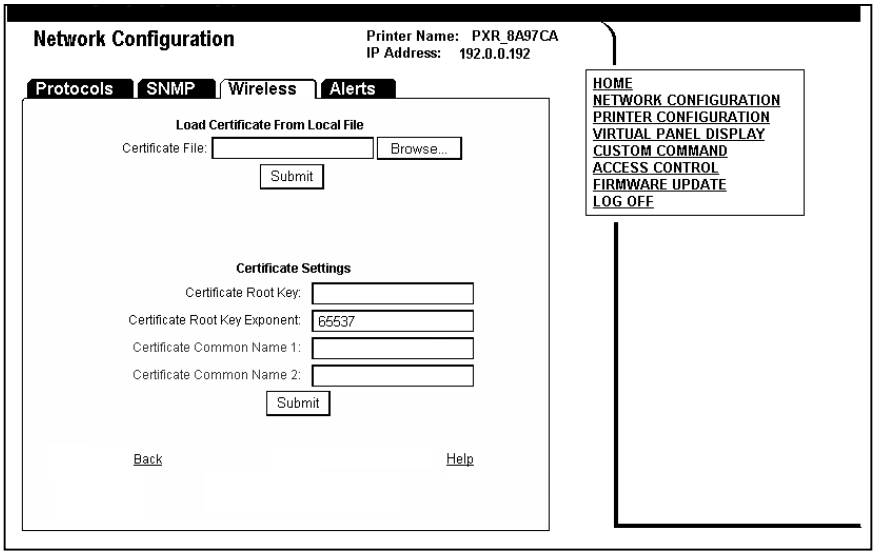
4. Click the **Protocols** tab.

5. Click **Save Re-init Network** (on the **Protocols** tab) before any changes take effect. Even though you submitted your changes on the previous screen, they do not take effect until you click **Save Re-init Network**. This process takes a few minutes.

Configuring Certificates

For TLS and TTLS authentication, you may need to configure the Authentication Server Certificate.

1. Select Configure Authentication Server Certificate (on the Wireless tab).



2. Click **Browse** to search for the appropriate **Root Certificate**. Click **Submit**. You see the **Root** (Public) **Key** in the Certificate Root Key window. The exponent is almost always 65537 (default). See "Basic Security Configurations" for more information.

   The **Certificate Root Key** is used to verify the root certificate in the certificate chain provided by the authentication server. Leaving this field blank sets the value to "null."
   The **Certificate Root Key Exponent** value must match the authentication server certificate value.

3. Enter the **Certificate Common Name 1**, which is the name of the certificate on the primary authentication server.

Note: If both common names are left blank, the values are set to "null" and all host certificates are accepted.

4. Click **Submit** at the bottom of the screen when finished.

5. Click Back to return to the previous screen.

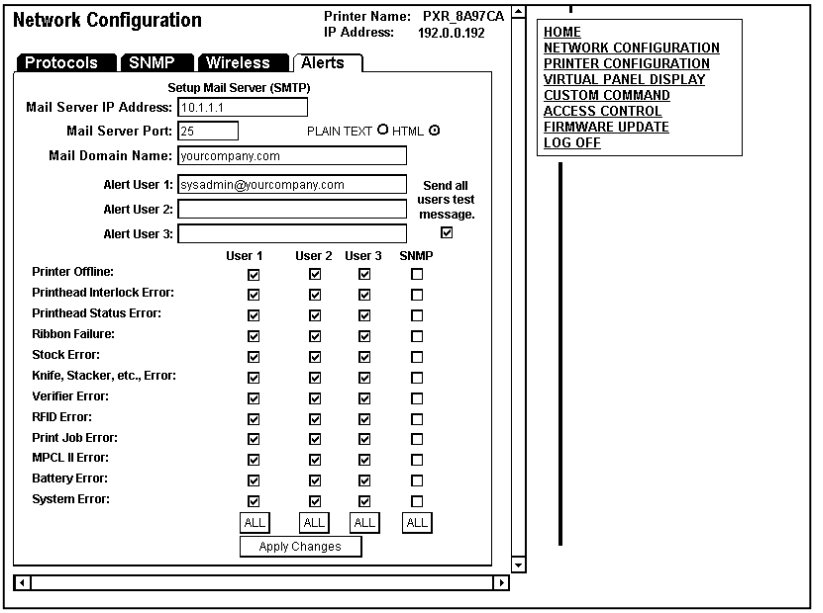
6. Click the **Protocols** tab.

7. Click **Save Re-init Network** (on the **Protocols** tab) before any changes take effect. Even though you submitted your changes on the previous screen, they do not take effect until you click **Save Re-init Network**. This process takes a few minutes.

Setting Alerts

Alerts and SNMP are supported with the release of version 3.0 or greater printer firmware. The printer also contains the minimum set required to be compliant with printer MIB version 2.0 (RFC 3805).

1. Click the **Alerts** tab to setup the mail server and select users to receive messages about the printer's status.



2. Enter the **Mail Server IP Address**.

3. Enter the **Mail Server Port**.

4. Enter the **Mail Domain Name**.

5. Select the message format: Plain Text or HTML.

6. Specify up to three users who will receive alert messages.

7. Select the alerts for each user. ALL is a toggle switch to select or deselect all the boxes for each user. The “Printer Offline” alert only appears if the operator presses **Escape/Clear** on the printer, not **Enter/Pause**.

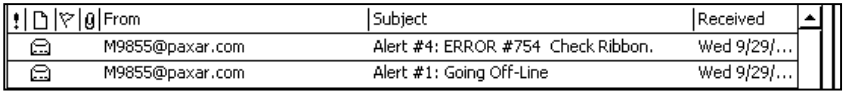
8. Click **Apply Changes** to save your alert settings.

9. Click the **Protocols** tab.

10. Click **Save Re-init Network** (on the **Protocols** tab) before any changes take effect. Even though you submitted your changes on the previous screen, they do not take effect until you click **Save Re-init Network**. This process takes a few minutes.

Receiving An Alert

When the printer goes offline, has a ribbon error, or any other error that you selected notification for, a similar email appears in the specified User’s inbox:



From	Subject	Received
M9855@paxar.com	Alert #4: ERROR #754 Check Ribbon.	Wed 9/29/...
M9855@paxar.com	Alert #1: Going Off-Line	Wed 9/29/...

The text of the email follows:

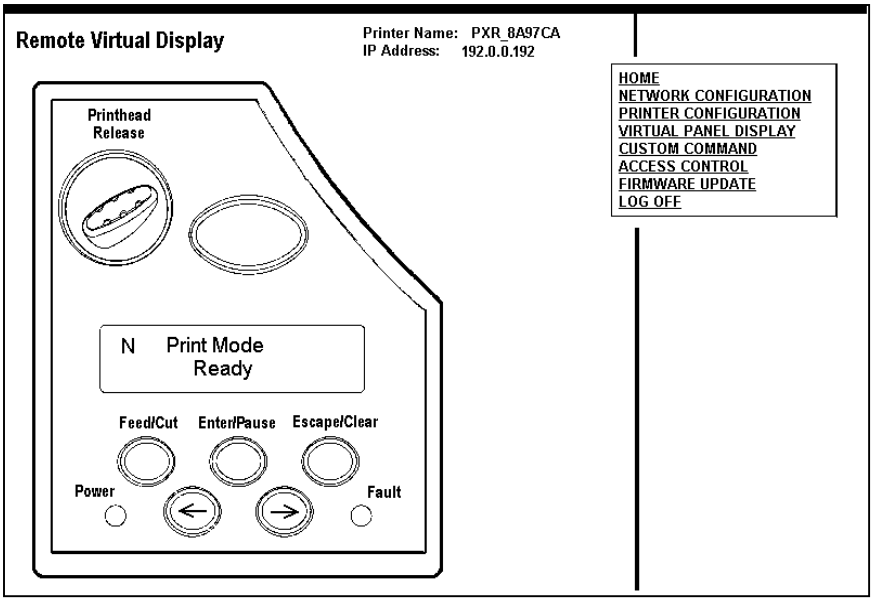
```
MonarchNet2 Printer Alert!!!
Prn IP:192.0.0.192
Prn Name:PXR8A97CA
Going Off-Line

Please DO NOT REPLY to this message.
```

Perform the appropriate action to correct the problem. Make sure the printer is ready to receive data (displays shows the “N” network symbol or the antenna symbol) after the problem has been corrected.

Reading the Virtual Panel

The virtual panel operates just like the printer's control panel. You can use the virtual panel to clear errors, feed labels, and more.

1. From the side Menu Bar, click **Virtual Panel Display**.

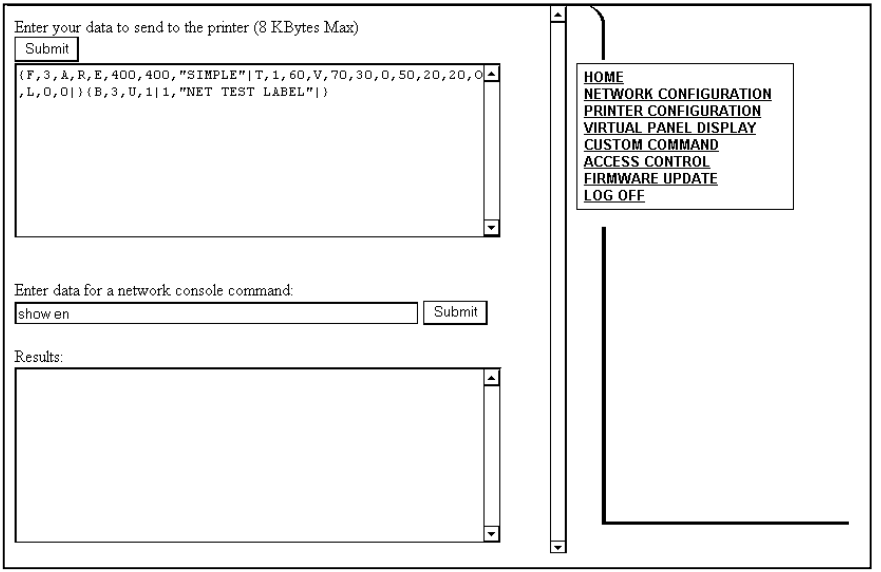


2. The current status of the printer appears on the virtual panel's display.

3. If there is an error, click **Escape/Clear** to clear the error. If you want to feed a label, click **Feed/Cut**.

Using Custom Commands

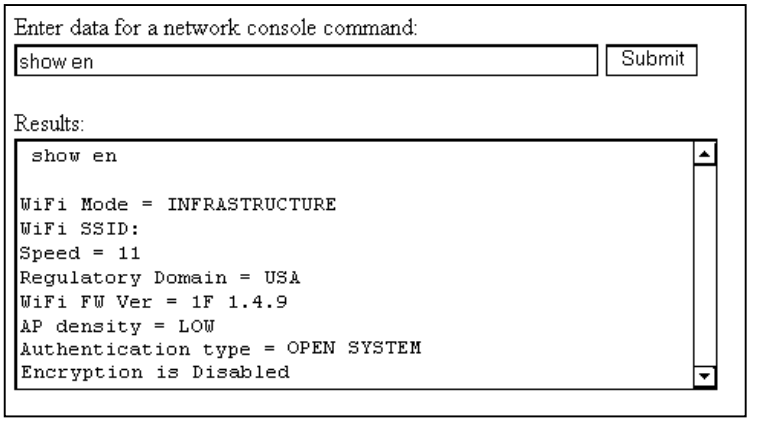
The Custom Commands menu allows you to enter MPCL format and batch data to print a label or enter Telnet console commands.



1. From the side Menu Bar, click **Custom Command**.

2. Enter any MCPL format and batch data or enter a Telnet console command. See Chapter 4, "Console Commands," for more information.

3. **Click Submit**. The MPCL format is sent or results from a Telnet console command appear.

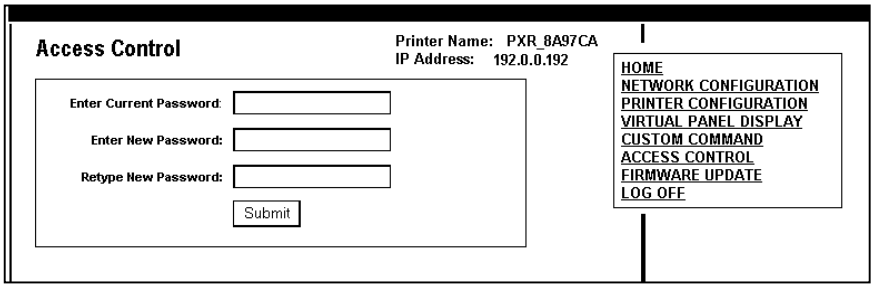


Changing the Password

You can change the access password for MonarchNet2. This should only be done by your System Administrator. The default is **access**. **The password is case-sensitive** and saved in the printer's flash memory.

Note: Make a note of the password if you change it. Changing the password also restricts access to Telnet sessions.

1. From the side Menu Bar, click **Access Control**.

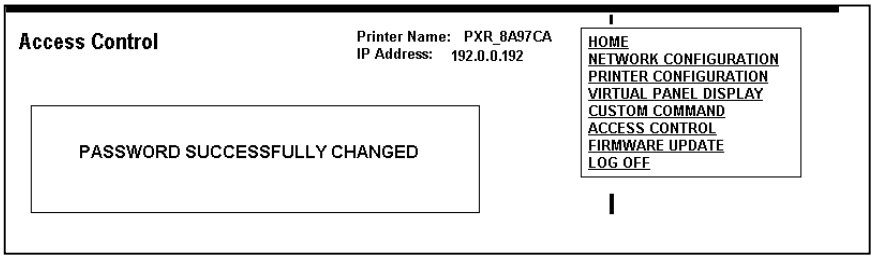


2. Enter the **Current Password**.

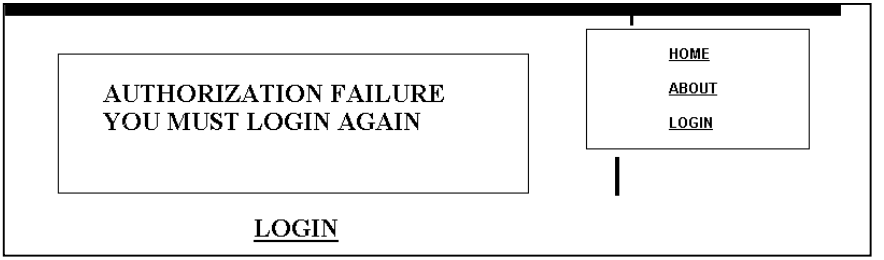
3. Enter the **New Password**.

4. Retype the **New Password** to confirm it.

5. Press **Submit** when finished.



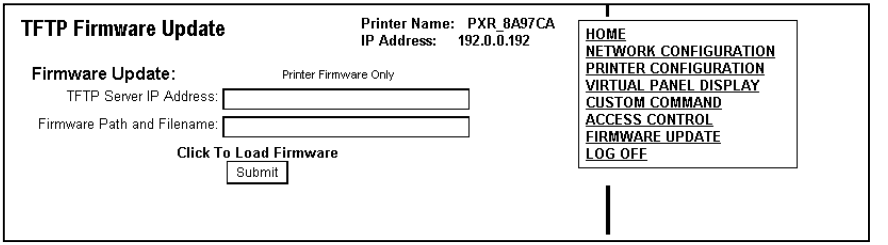
If you change the password and attempt to log in using the old password, this message appears. It also appears for various error conditions when configuring the printer.



6. Click **LOGIN** to login using the correct password and correct the problem.

Updating Firmware

You can update the printer's firmware. Make sure the Resident (Boot Loader) is version 2.3 or greater.



1. From the side Menu Bar, click **Firmware Update**.
2. Make sure your printer is connected and ready to receive data.
3. Enter the **TFTP Server IP Address**.
4. Enter the **Firmware Path and Filename** (relative pathname to your TFTP server). Refer to your TFTP Server's documentation for more information about setting up and using the TFTP server.

Note: Depending on your TFTP server, you may only need the filename, not the entire path.

5. Click **Submit** to load the firmware. If you lose power while updating the firmware, call Service.

Basic Security Configurations

There are two main decisions to be made when choosing wireless security: encryption method and authentication protocol.
The encryption method determines the algorithm used to encrypt the message. The authentication type specifies how users are identified and verified on a network. Is the device seeking connection what (and who) it claims to be?

Select an Encryption Method from the following table:

Encryption Method			
Type	**Algorithm**	**Size (bits)**	**Description**
WEP	RC4	64/128	This is the 64 or 128 bit WEP Key that must match other nodes' encryption keys in order to communicate. The user can only define 10 hex characters (40 bits) for 64 bit WEP or 26 characters (104 bits) for 128 bit WEP.
WPA	RC4	64/128	Improves on WEP by using TKIP* (Temporal Key Integrity Protocol), which dynamically changes the encryption key and MIC (Message Integrity Code), which replaces CRC.
WPA2	AES	128	Improves on WPA by replacing RC4 with AES (Advanced Encryption Standard) for encryption. The user can only define 26 characters (104 bits) for 128 bit WPA2.

***** Dynamic WEP cannot be selected directly, so select 128 for the encryption mode and select an authentication mode from one of the following: LEAP, PEAP, EAP-FAST, TLS, or TTLS.

Authentication Protocol					
Type		**RADIUS Server Protocol**	**User ID & Password**	**Certificate**	**Private Key Info File**
Enterprise	LEAP	PAP or MSCHAPv2	Required	No	N/A
	PEAP*			Optional*	N/A
	TLS				Required*
	TTLS				N/A
	EAP-FAST			PAC*	N/A
Personal	PSK	N/A			

*PEAP This is only for server-side certificates.

*Optional Leaving the Certificate Root Key and the Certificate CN (common) names blank, no validation of the host certificate is performed. The values are set to “null” and all host certificates are accepted.

*Required The Print Server comes with a default Private Key Information File. You can either download that file from the print server and add it to the TLS authentication server, or overwrite a new one on the print server.

*PAC EAP-FAST does not use certificates to authenticate, but a PAC (Protected Access Credential), which is managed dynamically by the server. The PAC is distributed one at a time to the client manually or automatically.

See the following table of acceptable combinations:

	Encryption	
Authentication	**WEP**	**WPA, WPA (TKIP), WPA2**
Open	Static	No
Shared		
PSK	Dynamic	Yes
LEAP		
PEAP		
EAP-FAST		
TLS*		
TTLS		

* Load the local key before enabling TLS.

CONSOLE COMMANDS

4

Use this chapter to configure the Print Server using Telnet.
You must have a basic understanding of the Telnet application.
For initial setup, do not use Telnet, use auto-discover mode.
Once you have the IP address, you can use Telnet or a Web browser.

RSH or REMSH (remote shell) support is available with the release of version 3.0 or greater printer firmware. Remote shell support is a common UNIX® application that provides remote command execution capability for networked devices. For more information, refer to your UNIX documentation.

- You can use Telnet if you do not have access to the MonarchNet2 software.
- This chapter also includes information about the Network Packet (Console Passthru).

Note: The default port is Port 23.

Conventions

This section uses the following conventions:

KEYwords	Type the capitalized letters of each keyword instead of the whole keyword. Some keywords require more capitalized letters than others. For example, **SEt** **KEYVAL** **RAdio**
[options]	Mutually-exclusive options are included within square brackets and separated by a forward slash. Select only ONE of the options. For example, **[DISable/STRICT/FLEXible]**
<values>	Values are included within brackets. Values that contain spaces (multiple words) must be enclosed within quotation marks (""). For example, **SEt EN PW <value>** **SEt EN PW "Store 876"**
n	Numeric digits are indicated by the letter (n). For example, **SEt IP BOot n** **SEt IP BOot 5** **SEt EN CHannel nn** **SEt EN CHannel 11**

Accessing Telnet Console Mode

1. Start a Telnet session.
2. Type telnet **192.0.0.192** (your printer's IP address) and press **Enter**.
3. You see "Welcome to MonarchNet2 Enter Password:"
   Type **access** as the password and press **Enter**. (**access** is the default password.)

The password is case-sensitive. *Depending on your printer's firmware version*, you may not be prompted for a username.

Note: The Telnet session times out after 10 minutes of inactivity.

4. To view the current wireless (or network) settings, type **sh en** (show wireless settings) and press **Enter**:

```
WiFi Mode = INFRASTRUCTURE
WiFi SSID: ABC123
Speed = 54
International Roaming: Flexible
Dynamic Frequency Selection: Unsupported
Regulatory Domain = USI
WiFi FW Ver = 2.13.10.0 LMAC, 2.12.18.0 UMAC
AP density = LOW
Authentication type= OPEN SYSTEM
Encryption is Disabled
Local certificate loaded
AP MAC Address = 00 A0 F8 51 B4 FC
Signal Quality = Excellent (100%)
Connected to SSID ENG4121 on channel 11
```

5. To show the current IP settings, type **sh ip** (show TCP/IP settings) and press **Enter**.

```
IP is enabled
IP address   192.0.0.192 Boot tries    3
Subnet mask  255.255.0.0 Boot method   AUTO
IP Gateway   192.1.1.192 Max window    10240
 (via DHCP  192.2.2.192)
LPD banner   disabled    Timeout         0 min
LPD retries are disabled Keepalive       1 min
Service   Port     TCP port
PXR1E8580_X1 X1    9100
```

6. To change the SSID, type **set en ssid testsystem** and press **Enter**.

7. To set the IP address, type **set ip ad 192.0.0.192** and press **Enter**.

8. To set the subnet mask, type **set ip sub 255.255.0.0** and press **Enter**.

9. Type **INIT** and press **Enter** to save the settings and initialize the unit.

10. Type **EXIT** to exit Telnet.

See the following sections for a list of the most frequently used commands.

Help Commands

For help at any time, type “Help” and a list of available commands appears. The Help command builds on itself, because for each command you type, more details appear for each option.

Note: There are help menus for all supported commands. To access a help menu for a specific command, type **HElp <command>**.

Syntax: **Help set**

```
DEFAULT   Set parameters to factory defaults
EN                        Network Parameters
LOAd                      Firmware update parameters
PAssword <password>       Set console password
PORt <name>  .            Parameter for port <name>
PROtect <password>        Set update password
SERVEr                    Server and LAT parameters
SERVIce   <name>          Service Parameters
SNMP                      SNMP Variables
Syslog                    Syslog Parameters
DNS                       DNS Parameters
STRing n "..."            BOT/EOT string
IP                        LPD/TCP Parameters
POP3                      POP3 Parameters
SMTP                      SMTP Parameters
NETWare                   Netware Parameters
POWERON  <delay-sec>      Power on delay
```

Displays a list of the available help commands for “Set.”

Syntax: **`Help set ip`**

```
IP LPD/TCP Parameters
ADdress  aa.bb.cc.dd      IP node address
ARP    [EN/DIS]           IP set via ARP
BAnner [EN/DIS]           LPD banner printing
CHKSUM [EN/DIS]           IP receive checksum
BOot      n               Number of DHCP/BOOTP tries
ENable/DISable            Enable or Disable IP Processing
FTIme  [EN/DIS]           Fast timeout
FTP    [EN/DIS]           FTP protocol
HTTP   [EN/DIS]           HTTP protocol
KEepalive n               Keepalive interval (min)
LPD    [EN/DIS]           LPD protocol
MEthod <type>             Set method of getting IP address
PIng   aa.bb.cc.dd        Test connection to IP host
PRObe  [EN/DIS]           TCP connection probes
RANge [EN/DIS/ALL] aa.bb.cc.dd {MAx ee.ff.gg.hh}
RARp flags nn             1=no subnet, 2=no router, 3=neither
REtry  [EN/DIS]           LPD retry continuation
ROuter aa.bb.cc.dd        Default router address
SUbnet aa.bb.cc.dd        Subnet mask
TCP    [EN/DIS]           Raw TCP (9100) protocol
TELnet [EN/DIS]           TELNET protocol
TFTP   [EN/DIS]           TFTP protocol
TImeout n                 Inactivity timeout (minutes)
TRAP n [ADDR/PORT/TRIG]   TRAP configuration
WIndow  nn                LPD/TCP maximum window size
```

Displays a list of the available help commands for “Set IP.”

General Commands

From the list of commands, the brackets - [] indicate to pick one of the options listed, the items inside curly braces - {} are optional and do not need to be specified.

CHange/SEt/DEFine

Changes configuration items.

CLear/DElete/PUrge

Removes a specified parameter or configuration item.

CLear FATal

Deletes fatal error log.

CLear PAssword

Removes the console password.

CLear POrt <portname> JOB

Clears current entry in the print server's internal queue for the specified portname (P1 for the first parallel port).

CLear PROTECT

Sets the update password to “null.”

CLear STRing n

Removes BOT/EOT string.

DEfine

Defines configuration items.

EXIT

Exits console mode.

EXIT/^D

Exits the print server console.

HElp

Displays the list of available commands.

SET

Sets a specified parameter.

SHow

Displays current settings.

INIT

Saves settings and initializes unit.

SAVE

Saves configuration settings.

SET DEFAULT

Sets print server to factory defaults.

SET LOAd [EN/DIS]

Enables or disables firmware reload after exit.

SET LOAd HOst <name>

Sets node name of boot host (NetWare firmware load).

SET LOAd IP aa.bb.cc.dd

Sets IP address of load host (TCP/IP firmware load).

SET LOAd SOftware <filename>

Sets print server's firmware filename to load.

SET LOAd XModem

Begins XModem serial download of new firmware.

SET PAssword

Sets console password. The user is prompted for old password, new password, and to verify new password. The default password is **access**.

Note: The password is case-sensitive.

SET PROtect <password>

Sets the update password.

SET SERVEr NAme <name>

Sets server node name.

SET SERVIce <servicename> <protocol> [EN/DIS]

Enables or disables specified protocol on specified service.

SET SERVIce <servicename> BOT nn

Sets service BOT string to nn.

SET SERVIce <servicename> EOT nn

Sets service EOT string to nn.

SET SERVIce <servicename> FIlter nn

Sets service filter to nn.

SET SERVIce <servicename> FMS nn

Sets filter 1 match string to nn.

SET SERVIce <servicename> FRS nn

Sets filter 1 replace string to nn.

SET SERVIce <servicename> NAme <newname>

Changes service name.

SET SERVIce <servicename> POrt <portname>

Changes the service port (<portname> is P1 and P2 for the first and second parallel ports and S1 and S2 for the first and second serial ports.)

SET SERVIce <servicename> REceive [EN/DIS]

Sets receive only mode on specified service.

SET SERVIce <servicename> TCP nn

Sets TCP port number of service.

SHow DATE or **DATE**

Shows the current date in format **Day mm/dd/yy hh:mm:ss**.

SHow FATal

Shows the fatal error log.

SHow FREE

Shows amount of available memory.

SHow LOAd

Shows the print server's firmware update parameters.

SHow POP3

Shows POP3 parameters

SHow PORt

Shows port parameters.

SHow PORt <name> STA

Shows the current port status.

SHow PRN DISplay

Shows the text currently on the LCD display.

SHow PRN CFG

Displays the printer configuration as an NCL file.

SHow PRN FEEdlabel

Feeds a label.

SHow PRN FFILE

Shows an existing NCL file in flash memory.

SET PRN FIRMWARE

Sets the printer in boot loader mode to reload the firmware.

SHow PRN FORmats {0/ALl/*format*#} {RAW}

Shows the specified format from flash memory. If no format is specified, or you choose 0 or ALl, then shows all formats that are stored in flash memory. If the optional "raw" argument is not specified, formats are displayed in default format, with each field on a separate line and formats separated by a blank line. If "raw" is specified, each format is displayed on a single line (fields are not separated).

Note: This command does not show formats that are only stored in RAM. To see format headers and clear formats, use the STOrage commands.

SHow PRN KEYpad

Shows the current status of the keypad lock.

SET PRN KEYpad [LOck/UNlock]

Locks or unlocks the printer's keypad.

SHow PRN LOG

Displays the NCL log file.

SET PRN RESET

Rests the printer (Telnet and remote shell only).

SHow PRN STAtus

Shows the printer's current status (decoded ENQ status bytes).

SHow PRN TEStlabel

Prints a test label.

SHow PRN UPASSwordstatus

Shows the current status of the offline menu user password (on or off).

SET PRN USPASSword status [YEs/NO]

Turns the offline menu user password on or off.

SHow SERVEr

Shows the server parameters.

SHow SERVEr COunters

Shows the server statistics.

SHow SERVEr QUeue

Shows the print server internal queue.

SHow SERVIce

Shows service parameters.

SHow TEstpage

Prints a test page.

SHow TIME

Shows the current time in format **hh:mm:ss**.

SHow VErsion

Shows the server firmware version.

UNPROTect

Allows the user to enter the update password (if one has been defined). Once the update password is entered correctly, SET commands can be used to modify the configuration until the console session is closed with EXIT.

UPTIME

Shows how long the printer has been on in format **hh:mm:ss up N day(s), hh:mm:ss.**

ZEro

Zeros statistical counts.

Setup Commands

SET PRN BACkfeedcontrol [ACtion/ DISPenseposition/ DISTance] value

Sets the specified backfeedcontrol parameter to the specified value.

SHow PRN BACkfeedcontrol {ACtion/ DISPenseposition/ DISTance}

Shows the specified backfeedcontrol parameter's current setting. If no parameter is specified, it shows the current settings of all parameters in the backfeedcontrol category.

SET PRN BATchoptions [CLearfields/ NUmberofparts/ CUTOption/ CUTMultiple/ PRintmultiple/ QUantity] PRompt [YEs/ NO]

Turns on or off the specified batch entry prompt. These parameters also have corresponding values, such as "cut last ticket" for CUTOption.

SET PRN BATchoptions [CLearfields/ NUmberofparts/ CUTOption/ CUTMultiple/ PRintmultiple/ QUantity] ***value***

Sets the specified batchoptions parameter to the specified value.

SET PRN BATchoptions [CUTLTicketprompt/ CUTAfterbatchprompt/ NOCutbeforeprompt/ CUTLStripprompt] [YEs/ NO]

Sets the specified batchoptions parameter's current setting. If no parameter is specified, it shows the current setting of all parameters in the batchoptions category.

SHow PRN BATchoptions {CLearfields/ NUmberofparts/ CUTOption/ CUTMultiple/ CUTLTicketprompt/ CUTAfterbatchprompt/ NOCutbeforeprompt/ CUTLStripprompt/ PRintmultiple/ QUantity}

Shows the specified batchoptions parameter's current setting. If no parameter is specified, it shows the current settings of all parameters in the batchoptions category.

SET PRN COMmunication [BAudrate/ WOrdlength/ STopbits/ PArity/ FLowcontrol/ PPort/ PMode] ***value***

Sets the specified communication parameter to the specified value.

SHow PRN COMmunication {BAudrate/ WOrdlength/ STopbits/ PArity/ FLowcontrol/ PPort/ PMode}

Shows the specified communication parameter's current setting. If no parameter is specified, it shows the current settings for all parameters in the communication category.

SET PRN CONtrolcharacters [STartheader/ PAramseparator/ QUotedstrings/ FIeldseparator/ ENDheader DAtaescape/ IMmediatecmd/ ENQRequest/ ENQTerminator/ JObterminator] ***value***

Sets the specified control character to the specified value. Setting the immediate command character enables immediate commands; setting the ENQ status request character enables ENQ status polling.

SHow PRN CONtrolcharacters {STartheader/ PAramseparator/ QUotedstrings/ FIeldseparator/ ENDheader/ DAtaescape/ IMmediatecmd/ ENQRequest/ ENQTerminator/ JObterminator}

Show the specified control character's current setting. If no parameter is specified, it shows the current settings of all parameters in the control characters category.

CLear PRN CONtrolcharacters [DAtaescape/ IMmediatecmd/ ENQRequest/ ENQTerminator/ JObterminator]

Clears the specified control character. Clearing the immediate command character disables immediate commands. Clearing the ENQ status request character disables ENQ status polling.

SHow PRN INFo {MOdel/ SErial/ FIrmversion/ BOotversion/ COntrastpot/ PIcversion/ KNifeversion/ RFidversion/ NEtworkversion/ TOtals}

Shows the specified info parameter. If no parameter is specified, it shows all parameters in the info category.

SET PRN MEMoryconfig [DOwnloadablefonts/ FORmat/ IMage/ REceive/ TRansmit/ VEctorfonts] ***value***

Sets the specified buffer's size the specified value.

SHow PRN MEMoryconfig [DOwnloadablefonts/ FORmat/ IMage/ REceive/ TRansmit/ VEctorfonts]

Shows the specified buffer's current size. If no buffer is specified, it shows the current sizes of all buffers.

SET PRN MONetary [MOnetarysign/ SEcondarysign/ DEcimaldigits] ***value***

Sets the specified monetary parameter to the specified value.

SHow PRN MONetary {MOnetarysign/ SEcondarysign/ DEcimaldigits}

Shows the specified monetary parameter's current setting. If no parameter is specified, it shows the current settings of all parameters in the monetary category.

SET PRN PRIntcontrol [COntrast/ PRintoposition/ MArginposition/ SPeed/ PHeadwidth] ***value***

Sets the specified printcontrol parameter to the specified value.

SHow PRN PRIntcontrol {COntrast/ PRintoposition/ MArginposition/ SPeed/ PHeadwidth}

Shows the specified printcontrol parameter's current setting. If no parameter is specified, it shows the current settings of all parameter's in the print control category.

SET PRN QUEuecontrol REpeat

Repeats last printed batch.

CLear PRN QUEuecontrol [ALlcancel/ CUrrentcancel/ ABorterror/ Reseterror]

Performs the specified action.

SHow PRN STOrage FLash

Shows the amount of unused flash memory.

SHow PRN STOrage FORmats {*format #* or ALl}

Shows headers for individual or all formats. Note that ‘0’ is shorthand for ‘ALl’.

SHow PRN STOrage FONts

Shows headers for all fonts.

CLear PRN STOrage FLash

Formats flash memory (user area only).

CLear PRN STOrage [RAm/ FLash] FORmats [*format #* or ALl]

Clears the specified format or all formats from volatile RAM or flash memory. Note that ‘0’ is shorthand for ‘ALl’.

CLear PRN STOrage [RAm/ FLash] FONts [*font #* or ALl]

Clears the specified font or all fonts from volatile RAM or flash memory. Note that ‘0’ is shorthand for ‘ALl’.

CLear PRN STOrage [RAm/ FLash] GRaphics [*graphic #* or ALl]

Clears the specified graphic or all graphics from volatile RAM or flash memory. Note that ‘0’ is shorthand for ‘ALl’.

CLear PRN STOrage [RAm/ FLash] CDigits [*CD scheme #*]

Clears the specified check digit scheme from volatile RAM or flash memory.

SET PRN SUPply [TYpe/ RIbbon/ FEedmode/ SUpplyposition/ CUtposition/ SKipindex/ KNifecontrol/ ERroraction] *value*

Sets the specified supply parameter to the specified value.

SHow PRN SUPply [TYpe/ RIbbon/ FEedmode/ SUpplyposition/ CUtposition/ SKipindex/ KNifecontrol/ ERroraction]

Shows the specified supply parameter’s current setting. If no parameter is specified, it shows the current settings of all parameter’s in the supply category.

SHow PRN SUPply SYncsupply

Resynchronizes the supply.

SET PRN SYStem [POwerupmode/ LAnguage/ BAtchseparators/SLashedzero/SYmbolset] value

Sets the specified system parameter to the specified value.

SHow PRN SYStem {POwerupmode/ LAnguage/ BAtchseparators/SLashedzero/SYmbolset}

Shows the specified system parameter's current setting. If no parameter is specified, it shows the current settings of all parameters in the system category.

SET PRN SCRipts [LOad/ ENable/ DISable/ DELETE]

Loads, enables, disables, or deletes a script. Note that LOad, ENAble, DISable, and DELETE take no arguments.

SET PRN SCRipts [ENQpollbeforescript/ IMmcmdbeforscript] ***value***

Sets the specified scripts parameter to the specified value.

SHow PRN SCRipts {STatus/ INfo/ ENQpollbeforescript/ IMmcmdbeforescript}

Shows the specified scripts parameter's current setting. If no parameter is specified, it shows the currents settings of all parameters in the scripts category.

SET PRN VERifier [STate/ SCanbeam/ CAbledetect] ***value***

Sets the specified verifier parameter to the specified value.

SHow PRN VERifier {STate/ SCanbeam/ CAbledetect/ SUmmary}

Shows the specified verifier parameter's current setting. If no parameter is specified, it shows the current settings of all parameters in the verifier category.

CLear PRN VERifier SUmmary

Clears the verifier summary data (number of good and bad verifier labels).

RFID Commands

SET PRN RFId [WRiteattempts/ PRotocol/ SIgnal/ RPower/ WPower] ***value***

Sets the specified RFID parameter to the specified value.

SHow PRN RFId {MOduletype/ VErsion/ WRiteattempts/ PRotocol/ SIgnal/ RPower/ WPower/ REgion/ FRequency/ SUmmary}

Shows the specified RFID parameter's current setting. If no parameter is specified, it shows the current settings of all parameters in the RFID category.

CLear PRN RFId SUmmary

Clears RFID summary data (number of good and bad RFID tags).

802.11b/g Wireless Commands

In the following commands, EN and NW (network settings) are interchangeable.

CLear EN SSid

Clears the SSID, so the server connects to any access point.

SET EN

Sets 802.11b/g Wireless Settings.

SET EN APDEN [LOW/MED/HI]

Sets 802.11b/g access point density.

SET EN AUTHtype [OPEN/SHARED/TTLS/LEAP/PEAP/WPA-PSK]

Sets the authentication type. See Chapter 3, "Using the Web Browser" for more information.

SET EN CERTCN <name>

Sets the EAP common name. If no value is set (null), all host certificates are accepted.

SET EN CERTCN2 <name>

Sets the second EAP common name. If no value is set (null), all host certificates are accepted.

SET EN CERTEXP <value>

Sets the EAP certificate exponent value.

SET EN CERTKEY <keyvalue>

Sets the EAP root key value.

SET EN CHannel nn

Sets 802.11b/g wireless channel.

SET EN ENC [DISable/64/128/WPA/WPA2/WPA2-WPA/ Dynamic WEP]

Sets the encryption mode. See Chapter 3, "Using the Web Browser" for more information.

SET EN ID <userID>

Sets the authentication user ID. It may include the realm, separated with the "at" ("@") character.

SET EN INAP [PAP/MSCHAP_V2]

Sets the EAP inner authentication protocol.

SET EN IROAM [DISable/STRICT/FLEXible]

Controls whether the radio frequencies are set based on the radio configuration or from its access point. Disabled uses the radio defaults. When in Ad-Hoc mode, you must set the region of operation. See "**SET EN REGDOMain**". Flexible uses access point settings if present, otherwise the radio defaults are used. When in Ad-Hoc mode, you must set the region of operation. See "**SET EN REGDOMain**". Strict uses access point regulatory frequency information. When using an access point, there is no need to set the region of operation.

SET EN PW <password>

Sets the password for 802.11b/g EAP authentication.

SET EN KEY# <1/2/3/4>

Sets which WEP key number to use (default is 1).

SET EN KEYVAL <WEPkey>

Sets WEP key value. Must be hexadecimal.

SET EN MODE [IN/AD]

Sets 802.11b/g wireless mode to infrastructure or Ad-Hoc mode.

SET EN REALM <realm>

Sets the realm portion of the 802.11b/g EAP authentication ID.

SET EN REGDOMain <countrycode>

Sets the region of operation for the print server using the following table. The list of supported countries varies based on the radio type (802.11b or 802.11b/g). When running in Ad-hoc mode or when **IROAM** is **disabled**, you need to set the radio for the region of operation.

Country Code	Description	Country Code	Description
AL	ALBANIA	LV	LATVIA
DZ	ALGERIA	LB	LEBANON
AR	ARGENTINA	LI	LIECHTENSTEIN
AM	ARMENIA	LT	LITHUANIA
AT	AUSTRIA	LU	LUXEMBOURG
AU	AUSTRALIA	MO	MACAO
AZ	AZERBAIJAN	MK	MACEDONIA
BH	BAHRAIN	MY	MALAYSIA
BY	BELARUS	MT	MALTA
BE	BELGIUM	MX	MEXICO
BZ	BELIZE	MC	MONACO
BO	BOLIVIA	MA	MOROCCO
BA	BOSNIA AND HERZEGOVINA	NA	NAMIBIA
BR	BRAZIL	NL	NETHERLANDS
BN	BRUNEI DARUSSALAM	NZ	NEW ZEALAND
BG	BULGARIA	NO	NORWAY
CA	CANADA	OM	OMAN
CL	CHILE	PK	PAKISTAN
CN	CHINA	PS	PALESTINIAN TERRITORY
CO	COLUMBIA	PA	PANAMA
CR	COSTA RICA	PE	PERU
HR	CROATIA	PH	PHILIPPINES
CY	CYPRUS	PL	POLAND
CZ	CZECH REPUBLIC	PT	PORTUGAL

Country Code	Description	Country Code	Description
DK	DENMARK	PR	PUERTO RICO
DO	DOMINICAN REPUBLIC	QA	QATAR
EC	ECUADOR	RO	ROMANIA
EG	EGYPT	RU	RUSSIAN FEDERATION
SV	EL SALVADOR	SA	SAUDI ARABIA
EE	ESTONIA	SG	SINGAPORE
FI	FINLAND	SK	SLOVAKIA
FR	FRANCE	SI	SLOVENIA
GE	GEORGIA	ZA	SOUTH AFRICA
DE	GERMANY	ES	SPAIN
GR	GREECE	LK	SRI LANKA
GT	GUATEMALA	SE	SWEDEN
HN	HONDURAS	CH	SWITZERLAND
HK	HONG KONG	SY	SYRIAN ARAB REPUBLIC
HU	HUNGARY	TW	TAIWAN
IS	ICELAND	TH	THAILAND
IN	INDIA	TT	TRINIDAD AND TOBAGO
ID	INDONESIA	TN	TUNISIA
IR	IRAN, ISLAMIC REPUBLIC OF	TR	TURKEY
IE	IRELAND	UA	UKRAINE
IL	ISRAEL	AE	UNITED ARAB EMIRATES
IT	ITALY	GB	UNITED KINGDOM
JP	JAPAN	US	UNITED STATES
JO	JORDAN	UY	URUGUAY
KZ	KAZAKHSTAN	UZ	UZBEKISTAN
KE	KENYA	VE	VENEZUELA
KP	KOREA, PEOPLE'S REPUBLIC	VN	VIETNAM
KR	KOREA, REPUBLIC	YE	YEMEN
KW	KUWAIT	ZW	ZIMBABWE

SET EN SPeed <1/2/5.5/6/9/11/12/18/24/36/48/54>

Sets 802.11b/g wireless speed in megabits per second (Mpbs).

SET EN SSID "<ssid>"

Sets 802.11b/g wireless SSID. Use quotes if there is a space in SSID. This is case sensitive.

SH EN STATS

Shows the network I/O statistics.

SET EN WEP [DIS/64/128]

Sets wired equivalent privacy encryption level to disabled, 64-bit, or 128-bit.

SET EN WIRED [AUTO/10BASE/100BASE]

Sets the Ethernet speed.

SET EN WPAGROUP [ENABLE/DISABLE]

Selects whether to use the WPA group key mode. When enabled, group keys are used for data link encryption.

SET EN WPAPSK <WPAkey>

Sets the WPA pre-shared key or pass-phrase. Use 64 hex characters for the PSK or 8-63 characters for the pass-phrase. This is only valid when authentication mode is WPA-PSK.

TCP/IP Commands

SET IP [EN/DIS]

Selects whether to use IP-based protocols.

SET IP ACcess [EN/DIS/ALL] aa.bb.cc.dd [Mask ee.ff.gg.hh]

Allows or prevents specified IP address from accessing print server.

SET IP ADdress

Sets IP address of print server.

SET IP ARP [EN/DIS]

Selects whether to use an IP address with an ARP packet.

SET IP BANNER [EN/DIS]

Sets printing of LPD job banners.

SET IP BOot n

Sets number of retries (n) for DHCP, BOOTP, RARP

SET IP CHKSUM [EN/DIS]

Enables or disables IP receive checksum.

SET IP FTime [EN/DIS]

Enables or disables fast timeout.

SET IP FTP [EN/DIS]

Selects whether to use the FTP protocol.

SET IP HTTP [EN/DIS]

Selects whether to use the HTTP protocol.

SET IP KEepalive n

Sets keep alive interval (n) in minutes.

SET IP LPD [EN/DIS]

Selects whether to use the LPD protocol.

SET IP MEthod [AUTO/BOOTP/RARP/DHCP/STATIC]

Sets method of getting IP address.

SET IP PING aa.bb.cc.dd

Sends IP ping packets to test the host connection.

SET IP PRObe [EN/DIS]

Enables or disables the TCP connection probe.

SET IP RARp nn

0 Both
1 no subnet
2 no router
3 neither
Default (0) - IP address is set with subnet mask and router that is the same address as host.

SET IP RANGE [EN/DIS/ALL]

Sets the valid range of IP addresses.

SET IP REtry [EN/DIS]

Enables or disables LPD retry continuation

SET IP ROuter aa.bb.cc.dd

Sets default Router/Gateway address (or access point).

SET IP SUBnet aa.bb.cc.dd

Sets default subnet mask.

SET SERVIce <servicename> IP [EN/DIS]

Enables or disables TCP/IP jobs on specified service.

SET SERVIce <servicename> TCP nn

Sets TCP port number (>1023 on service).

SET IP TCP [EN/DIS]

Selects whether to use the raw TCP (port 9100) protocol.

SET IP TELNET [EN/DIS]

Selects whether to use the Telnet protocol.

SET IP TFTP [EN/DIS]

Selects whether to use the TFTP protocol.

SET IP TImeout n

Sets timeout (n) in minutes.

SET IP WIndow nn

Sets the LPD/TCP maximum window size

CLear SNMP CONtact <string>

Removes SNMP SysContact.

CLear SNMP LOCation <string>

Removes SNMP SysLocation.

SET SNMP GETCOMM <string>

Gets SNMP community.

SET SNMP SETCOMM1 <string> or SET SNMP SETCOMM2 <string>

Sets SNMP community 1 or community 2 name.

Note: An incoming set request can use either name for comm1 or comm2.

SET SNMP CONtact <string>

Sets SNMP SysContact.

SET SNMP LOCation <string>

Sets SNMP SysLocation.

SET SNMP JETADmin [EN|DIS]

Selects whether to use the JetAdmin protocol.

Using the Network Packet

Use the Network Packet to send console commands directly to the network card via the printer's serial port. If the network card does not appear to be communicating with the printer, you can use the Network Packet to change the SSID, IP address, etc. of the network card.

Note: You can use Network Packet even if MonarchNet2 is disabled or not installed. Printer console commands are available but network console commands are not.

Syntax **{N,number,action,device,"name"¦**
C,"con_cmds"¦}

N1. N	Network Console Packet.
N2. number	Number from 0-999 to identify the network console packet.
N3. action	Enter **A** to add to packet to the printer.
N4. device	Enter **T** to pass the packet through the printer and stores the packet in the network card.
N5. "name"	Packet name, 0-8 characters, enclose within quotation marks.
C1. C	Command field.
C2. "con_comds"	Console commands. Must be enclosed within quotation marks. Each command must be on a separate line. The maximum number of characters per command is 100. See the list of commands earlier in this chapter for more information.

Note: The maximum number of commands per packet is twenty-five (25).

Example **{N,1,A,T,"mystore"¦**
C, "set ip me static"¦
C, "init" ¦
C, "exit" ¦}

Sends the Network Packet **1** "**my store**" directly to the network card (**T**) and **set**s the **IP me**thod to **static** for determining IP addresses. Init and Exit commands must be used to save changes and initialize the network card.

USING THE SMART RELAY SYSTEM

5

The Smart Relay System consists of two printers (primary and partner) connected with a serial cable. Based on the type of data sent, the batch prints to the appropriate printer. The primary printer must be a 9855 printer with Version 3.1 or greater firmware using MonarchNet2 software. The partner printer can be a Monarch® 9855® or 9860™ printer.

The primary printer forwards the batches, according to the Smart Relay configuration. Use this addendum to configure the Smart Relay commands using Telnet.

Additionally, you can number all the labels in a batch with a collation number that prints on every label. The primary printer controls the collation number, according to the Smart Relay configuration.

Note: If you need to turn off either printer, turn off the partner printer first, then, turn off the primary printer. When turning on the Smart Relay Printing System always turn on the primary printer first, then wait until you see "Smart Relay Ready," before turning on the partner printer.

Initial Smart Relay Setup Procedures

Follow these steps as listed or errors may occur.

1. Connect the printers. See "Connecting the Printers," for more information.
2. Turn on the partner printer.
3. Configure the Partner Printer. See "Configuring the Partner Printer," for more information.
4. Turn off the partner printer.
5. Turn on the primary printer.
6. Configure the Primary Printer. See "Using the Smart Relay Telnet Commands," for more information.
7. Turn off both printers.
8. Turn on the primary printer. Wait until you see "Smart Relay Ready," then turn on the partner printer.
9. Send your data.

About the Primary Printer

The primary printer

- must be a 9855 printer using MonarchNet2 software
- can have only one partner
- connects to the partner printer using a serial cable. You cannot use the optional external keyboard with the primary printer.

Note: There is **no** bi-directional communication between the primary and partner printers.

For maximum efficiency, the primary printer should print the majority of the supplies. If you print more RFID supplies than non-RFID supplies, make the RFID printer the primary printer. This reduces the amount of data transferred to the partner printer and requires less processing by the primary printer.

All formats, graphics, fonts, or check digits used with the Smart Relay system must be sent to the primary printer. See "Connecting the Printers" and "Configuring the Partner Printer" for more information.

The primary printer does not forward any of the following to the partner printer:

- online configuration packets
- immediate commands
- status polling (ENQ) requests
- ADK scripts

If an XOFF character is received, the primary printer stops processing MPCL data, until an XON character is received. The primary printer displays "Please Wait... Partner Printer" while it tries to resend data to the partner printer.

Pressing **Escape/Clear** on the primary printer exits Smart Relay mode for the current batch, so the primary printer does not send the current batch to the partner printer.

When the primary printer is in Smart Relay mode, you see "Smart Relay Ready." If you print a Network Test label, Smart Relay information appears on the bottom of the label, indicating this printer is a primary printer.

About the Partner Printer

The partner printer can be a 9855 or 9860 printer. The partner printer is unaware that it is a "partner printer." It can accept data from other sources besides the primary printer. *Since the partner printer can accept data from multiple sources, formats/batches can be overwritten.*

Note: Use unique format numbers. If you do not have a unique format number, always precede the batch with the format you want to print. For example, send the data to the printer in this order: **`{Format} {Batch} {Format} {Batch}`**. Otherwise, unexpected results or errors may occur.

The partner printer must be configured to specific communication settings. See "Configuring the Partner Printer" for more information.

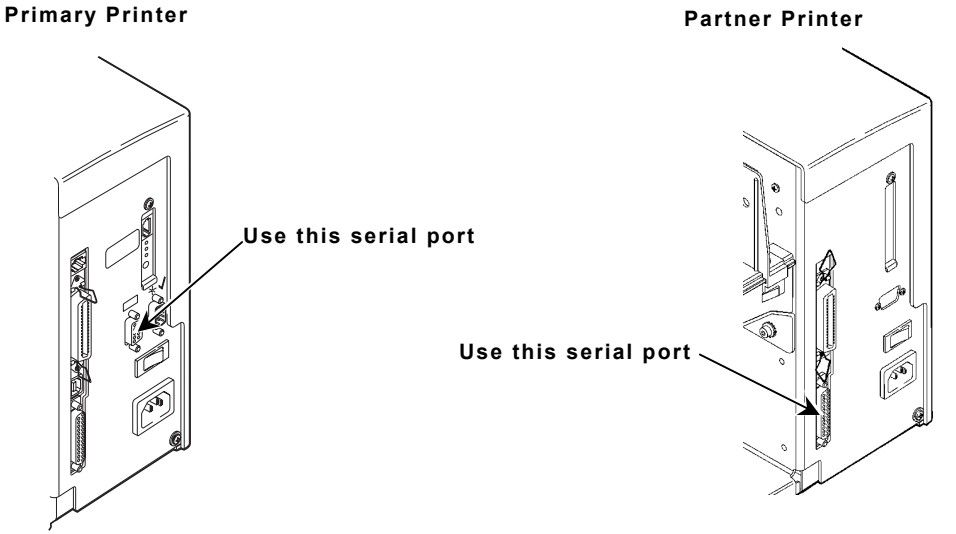
Formats, fonts, graphics, and batches are limited to the amount of available memory in the partner printer. If you send a batch that does not print, check the available memory in the partner printer.

Note: The display and test label for the partner printer do not indicate that it is a partner printer.

For the primary printer, you see a line of data for "Smart Relay." The #number indicates the next number in sequence for collation. The r/c numbers indicate the row and column location for the collation number. See Chapter 6, "Troubleshooting," for more information about the test label.

Connecting the Printers

Connect the serial cable 126089 from the 9-pin auxiliary serial port on the primary printer to the 25-pin serial port on the partner printer.



Configuring the Partner Printer

The partner printer must be configured to 115200 Baud, No parity, 8-bit word length, 1 stop bit, and XON/XOFF flow control.

1. Select **Setup**, **Port Settings**, **Serial Comm** from the partner printer's Main Menu. If password protection in enabled, press **Feed/Cut** three times, then press **Enter/Pause** before you see the Setup Menu options.

2. Select Baud Rate and press ← or → to scroll until you see 115200. Press **Enter/Pause**.

3. Press ← or → to select **Word Length**. Scroll until you see 8. Press **Enter/Pause**.

4. Press ← or → to select **Stop Bits**. Scroll until you see 1. Press **Enter/Pause**.

5. Press ← or → to select **Parity**. Scroll until you see None. Press **Enter/Pause**.

6. Press ← or → to select **Flow Control**. Scroll until you see XON-XOFF. Press **Enter/Pause**.

Using the Smart Relay Telnet Commands

See the following list of commands to configure the printers.

`SET PRN RELay PORt [None/S2]`

Sets the Smart Relay Partner Identification (port) number to None (no partner printer) or S2 (partner printer connected to serial port 2). The default is None.

SET PRN RELay FILter [OFF/NONE/RFID/NONRFID]

Sets the Smart Relay Filter to

OFF	Does not forward any data - primary printer prints all batches.
NONE	Forwards ALL data to primary AND partner printer – batches print on both the primary and partner printers.
RFID	Forwards RFID batches to the partner printer.
NON-RFID	Forwards non-RFID batches to the partner printer.

The default is None.

Setting the Smart Relay Filter to None causes the batch to print on BOTH the primary and partner printers. To use this option, you may need a custom script (application) to perform additional filtering. For example, a custom application filters which format is printed between two printers loaded with different-sized supplies: 4x2 and 4x6. Our Professional Services group can develop custom RFID scripts (applications) or other types of data manipulation scripts. Call Customer Service for more information.

SET PRN RELay COUNTer [NONE|0-9999]

Sets the Smart Relay Counter Number to None (no counter is used) or 0 to 9999 (beginning value for counter). The default is None.

SET PRN RELay POS [0-2400] [0-2400]

Sets the Smart Relay Field position (collation field) in graphic dot row and column values. The default is 0,0.

The CLear and SHow commands can also be used on these commands. Using CLear sets the values back to their defaults.

Example **SET PRN REL POR S2**

Sets the Smart Relay port to serial port 2 (enables the Smart Relay system).

Note: After sending this command, turn off the printer. Wait several seconds and then turn on the printer for the command to take effect.

Example **SET PRN REL FIL NONRFID**

Sets the Smart Relay filter to non-RFID, so batches with no RFID Data Field are sent to the partner printer.

Example **`SET PRN REL COUNT 1`**

Sets the Smart Relay counter (collation) to one. For more information about the counter, see "About the Smart Relay Counter."

Example **`SET PRN REL POS 10 5`**

Sets the Smart Relay counter (collation) field position on the label to 10 (for the row) and 5 (for the column).

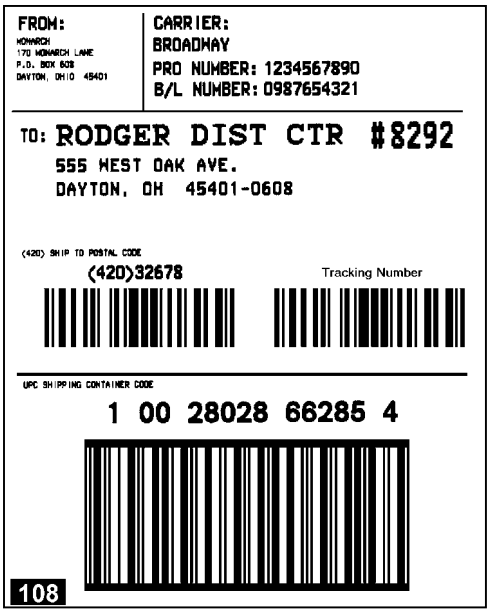
The usable maximum values are dependent on printhead density (203 dpi or 300 dpi). The maximum label size is four inches wide by eight inches tall.

Printhead Density	Row	Column
203	0-812	0-1624
300	0-1200	0-2400

Note: *The Smart Relay Counter Field overwrites any format data in the same location.* Make sure your format is designed with the Smart Relay Counter Field's height and width in mind, so data is not overwritten.

About the Smart Relay Counter

The Smart Relay counter keeps your batches in order. Use the collation number to put printed labels back into the order they were sent to the primary printer. To use the Smart Relay counter, enable the counter and then set the row and column positions.



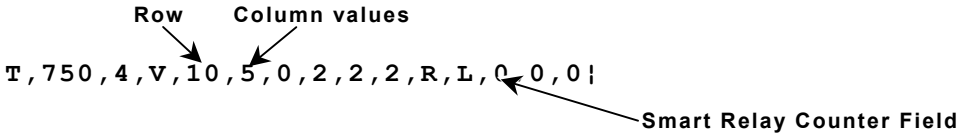
The collation number prints on each batch printed on both the primary and partner printers. Batches are numbered in the order they are received, not in the order they are printed. The collation number refers to the batch, not the individual labels in a batch. For example, a batch of ten labels would have the same collation number on them, so they could be kept together. We recommend only sending batches of one.

To stop printing the collation number on formats, use this command: **SET PRN REL COUNT NONE**.

- The counter field appears in Bold, Reversed type - design formats with the counter field's height and width in mind, so data is not overwritten.
- The counter always counts to 9999 and then starts back at 0. The value entered with the console command (**SET PRN REL COUNT 10**) is the value used for the next label.
- The counter value is saved when you turn off the printer.
- Repeating a canceled batch uses the next number in sequence. *There is no way to decrement the counter*.
- Batches sent to the partner printer *from other sources* (besides the primary printer) *are not incremented and have no Smart Relay collation field.*

Note: If using the Smart Relay counter, do not use the Repeat Batch, Cancel All, or Cancel Batch menu items. These items cause the counter number to be incorrect. To set the counter to the correct number, use the console command: **SET PRN REL COUNT xxxx**, where **XXXX** is the correct number.

After you specify the row and column locations, the Smart Relay counter field is automatically appended to your format. If you view the MPCL data for the format, the Smart Relay counter field appears like this text field:



Note: Do not add field 750 to your formats. It is reserved for the Smart Relay Field Position and automatically added to the format by the primary printer.

TROUBLESHOOTING 6

This chapter contains information about printing a test label and correcting some problems that may occur.

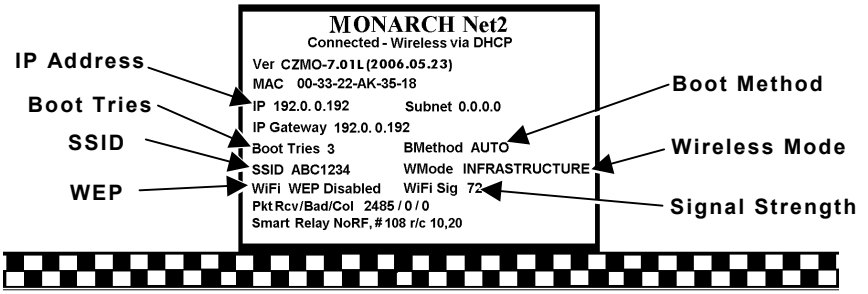
Printing a Test Label

If you have difficulty communicating with the print server or printer:

1. Verify that the printer is operating properly, is online, and supplies are loaded correctly.

2. If the printer is working correctly, test the connection between the printer and the print server by pushing the test button on the back of the printer for less than five seconds. A sample configuration label should print. See Chapter 1, "Getting Started" for more information.

3. Press and hold ← and → at the same time one second and release. A series of test labels print. The third test label contains wireless and network settings. If the test labels do not print, call Service.



Network/Wireless Test Label

The third test label displays the settings for the IP address, subnet address, IP gateway, boot tries, boot method, SSID, wireless mode, WiFi WEP, WiFi signal, packets received, bad packets received, and packet collisions. It also lists Smart Relay information. See Chapter 2 or 3 if you need to change any of the IP or wireless settings.

Use this table to solve some common printer/network problems.

Problem	Action
Printer does not appear to save IP, subnet, or gateway address.	The value for each segment must be less than 255 in these addresses.
Printer does not communicate with network card or access point.	If you have reset network or wireless settings, allow time for the printer to reset and connect to an access point. This may take a minute or more, depending on network traffic.
The printer does not communicate with your network.	The network settings must match the print server's settings for: ♦ IP address, gateway, and subnet mask ♦ SSID ♦ Ad-Hoc or infrastructure mode ♦ Security
Cannot see print server on network.	The devices must be on the same logical network and the subnet masks should be the same.
Configuration/test label shows "searching" or "set manually" for boot method/DHCP.	The message "searching" indicates the print server has not connected to the network yet. The message "set manually" indicates the boot method is Static. If the boot method is not Static, the print server was not able to connect to the network.

Use this table to solve some common MonarchNet2 Web browser problems.

Problem	Action
Verifier does not appear as an installed/enabled option through your Web browser.	The optional verifier must be enabled and properly connected. For more information, see your verifier's *Operating Instructions*.
"Error sending the discovery request" message on your computer/Web browser.	The print server is not communicating on the network. Verify network and print server settings, including IP address, etc.
MonarchNet2 does not appear to be working.	Turn off the printer and turn it back on. Print a configuration label (press the test button on the back of the print server) to confirm the IP address, etc. Enter the correct IP address in your Web browser.
"Authorization Failure" message from MonarchNet2 on our computer/Web browser.	Enter the correct password when logging in to MonarchNet2.

General Troubleshooting Information

Use the following information if your print server is not operating properly.

1. Verify that the printer is turned on.
   If the printer is used on a Monarch® Mobile Work Station (MWS), the MWS unit's power AND the printer must be turned on. The print server does not function when the printer is turned off.

2. If you are switching between wired and wireless mode on different subnets, turn off the printer and then turn it back on to reinitialize the print server.

3. Verify the print server is functioning.
   When the printer is turned on, the print server runs through a set of power-up diagnostics for a few seconds. All three LEDs blink momentarily. Then, the LEDs indicate the following activity:

LED Indicators		Status
Orange	solid	printer is on
	blinking	error
	off	printer is off
Yellow	solid	Ethernet link (wired 10baseT)
	blinking	network activity
	off	no Ethernet connection
Green	solid	Ethernet link (wired 100baseTX)
	blinking	network activity
	off	no Ethernet connection
Yellow & Green	solid	wireless link
	blinking	network activity
	off	no wireless connection

4. Print a configuration label (see Chapter 1).
   Press the test button on the print server for about a second and a label prints.

Use four-inch supply. If you are using supply that is shorter than four inches long, temporarily change your supply type to "continuous" to print the entire test label. After printing the test label, change your supply type to your previous setting.

Once you see "Print Mode Ready" on the display, print a test label. If this does not print or the printer does not display "Print Mode Ready," the printer is locked up. Turn off the printer, wait 15 seconds and then turn it back on.

If the printer displays "Print Mode Ready," but is not printing, verify that the parallel port settings did not change.
The Parallel Port setting should be "Internal" and the Mode setting should be "IEEE1284". (From the Main Menu, select Setup, Port Settings, Parallel Comm., Port and Mode.)

5. On the test label, verify your IP and WiFi settings. the "wired/wireless:" value should be "WIRED" for Ethernet cable and "WIRELESS" for RF.

Check the "WiFi SSID" and the "signal strength." Is the SSID correct? Is the signal strength greater than zero? If the signal strength is 0, there is no connection with the access point; 30 (or less) indicates you may be experiencing interference or close to being out of the access point's range, and below 50, printing performance could be affected. If the signal strength is low, increase the number of retries. To improve the signal strength, try moving the printer closer to the access point and away from other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones.

6. Telnet to the printer.

Note: After the print server has been reset, you may need to re-enable Telnet.

Once you have verified connectivity, Telnet to the printer.
(i.e. **`telnet aa.bb.cc.dd`**)
You see "Welcome to MonarchNet2 Enter Password:"
Type **`access`** as the password and press **Enter**.
(**access** is the default password.)

The password is case-sensitive. *Depending on your printer's firmware version*, you may not be prompted for a user name. Once here, you have verified operation to the print server.

7. Ping the printer.
Pinging the printer tells you if it is "seen" on the network. If you cannot ping the printer, turn the printer off and then on. Then ping every device in the path to the printer – access points, routers, etc. Any device you cannot ping needs attention.

`ping ip address` (i.e. **`ping 192.0.0.192`**)

8. Verify connection to the data port by starting a Telnet session to the printer using Port 9100 (i.e. **`telnet aa.bb.cc.dd 9100`**).

Press **Ctrl-E** on your keyboard. This sends an ENQ request. The printer responds with three characters. Depending upon the Telnet being used, you may not see the first character, as it is a hex 05 value. The other two characters are ASCII characters. You will see

`A@`

which means the printer is online and waiting. Alternatively, you can type

`{J,2}`

Note: The **J** must be capital.

The printer responds with **`{J,0,0,"","",}`**.

No response means that the printer may have an open session to some other connection. Either terminate the other connection or turn off the printer and turn it back on.

Troubleshooting Wireless Configuration Problems

1. Your computer's wireless adapter and/or access point should be configured to match your print server.

2. The printer should be within range (90 meters or 300 feet) of your computer and away from metal objects and other devices with radio signals (Bluetooth®, 2.4 GHz cordless phones, and microwaves).

3. Use infrastructure mode to connect through an access point. Use Ad-Hoc mode to connect without an access point.

4. To use encryption or password protect your wireless network, and your wireless adapter or access point normally uses a password or pass-phrase instead of WEP, it should allow you to enter 0x followed by a ten digit (for 40-bit or 64-bit WEP) or twenty-six digit (for 128-bit WEP) key in hexadecimal format (0-9 or A-F).

5. Change the RF channel (**Ad-Hoc mode only**) to correct intermittent connection problems or slow performance. Change it to at least three channels lower or higher than any other wireless networks within range.

Technical Support

If these solutions do not work, call Service at the number listed on the back of this manual.

SPECIFICATIONS

A

Link Layer:	802.3 or optional 802.11b/g
Protocols:	TCP/IP Passthru BOOTP DHCP RARP LPD/LPR Telnet RSH or REMSH (remote shell) FTP SNMP NetWare HP Jet Admin

802.3 Specifications

Communication Rate:	10 Mbps or 100 Mbps

Optional 802.11b/g Specifications

Frequency:	2.4 GHz range, direct sequence
Communication Rate:	1, 2, 5.5, 11, 12, 18, 24, 36, 48, or 54 megabits per second
Channels	1 to 11
Mode:	Ad-Hoc or infrastructure
Encryption:	WEP 64 or WEP 128 WPA or WPA2
Authentication:	EAP-FAST LEAP PEAP TLS TTLS PSK

Options

Wireless 802.11b/g communications are available. However, check with International Sales for an approved list of countries or regions where these devices can be used.

GLOSSARY

G

Absolute Pathname	The full path of a file, including the computer system and any directories or subdirectories. For example, **c:\program files\monarch software\mpcl toolbox\9855.phu**
Access Point	An interface between a wireless network and a wired network. Access points can be used with Ethernet or other communications to enable roaming throughout a facility.
Ad-Hoc Network/Mode	A wireless network composed of devices that contain a network interface card and no access point. Ad-Hoc mode is also called peer-to-peer (point-to-point) communications or BSS network. As long as the devices are in range and are on the same channel and SSID, they connect and communicate. Use this mode if a wireless infrastructure does not exist or where services are not required.
Authentication Method	This method identifies users on a network, based on a username and password. There are two types: open and shared. Authentication protocols include LEAP, PEAP, TLS, TTLS, EAP-FAST, and PSK.
Auto Method	One of the available boot methods. Auto tries DHCP, BOOTP, and RARP, then sets to the last IP address used if the IP address is not automatically set using any of the previous methods.
BOOTP or Bootstrap Protocol	One of the available boot methods. It is a protocol used by devices that know their MAC address, but do not know their IP address. The device broadcasts its hardware address and the BOOTP server responds with the IP address for it. The network administrator must enter the MAC address in the BOOTP Config file to obtain the IP address from the server.
Boot Method	The wireless print server uses this method to obtain an IP address. This can be set to Auto, DHCP, BOOTP, RARP, or Static.
Boot Tries	The number of times the device tries to get an IP address from the server when using the BOOTP and DHCP methods.
BSS or Basic Service Set	A set of 802.11b/g devices operating as a fully connected wireless network.
BSSID	See *MAC Address*.

Channel or RF Channel	You can select which channel your network devices use to communicate. All devices must be on the same channel to communicate in Ad-Hoc mode. Other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones may operate/interfere if they are on the same channel as your network.
DHCP or Dynamic Host Configuration Protocol	One of the available boot methods. It is a protocol that issues IP addresses automatically within a specified range to devices (such as printers) when they are first turned on. The device keeps the IP address for a defined period of time set by your System Administrator; however, a device could have a different IP address every time it connects to the network.
EAP (Extensible Authentication Protocol)	Defines how to pass authentication information between the device and authentication server. The authentication is handled by the EAP type: FAST, TLS, TTLS, etc.
FAST (Flexible Authentication via Secure Tunneling)	Cisco Systems® developed this authentication protocol. It does not use certificates to authenticate, but a PAC (Protected Access Credential), which is managed dynamically by the server. The PAC is distributed one at a time to the client manually or automatically.
Gateway	Allows connections (communications) between different subnets on a network.
Infrastructure Mode	Requires an access point to communicate with other devices on the network. In infrastructure mode, wireless devices can communicate with each other or with a wired network.
IP Address	An Internet Protocol identifier for a device on a network. It consists of four 3-digit numeric fields, separated by periods. Each number can be zero to 255. An IP address has two components, the network address and the host address. Most company networks have ranges for their IP addresses.
LAN or Local Area Network	A computer network that connects personal computers, workstations, servers, and printers. This allows each user on the network the ability to share devices, such as printers, and communicate with each other via email, etc. LANs can be connected to each other by telephone lines or radio waves. See *WLAN*.
LEAP (Lightweight Extensible Authentication Protocol)	Cisco Systems® introduced this authentication protocol and provides mutual authentication with unique WEP keys for each user. New keys are issued based on a time limit. Changing the WEP key time limits provides additional security.

LPD/LPR	A printer protocol that uses TCP/IP to establish connections between printers on a network. Also known as Line Printer Daemon/Line Printer Remote.
MAC Address or Media Access Control	A hardware address (6-byte) that uniquely identifies each node of a network. The MAC address is set during manufacturing and does not change. Also, two Network Interface Cards (NIC) **will not** have the same value.
MSCHAPv2 (Challenge Handshake Authentication Protocol)	MSCHAPv2 is the Microsoft® version of CHAP. It is a three-way handshake protocol that is more secure than PAP. It provides mutual authentication between devices.
NIC or Network Interface Card	An adapter (board or card) that can be inserted into a device, so the device can be connected to a network. The NIC converts data from the device into the form transmitted or received from the network
Node	A processing location on a network. The location can be a workstation, computer, or printer. Each Node has a unique MAC address.
Open Authentication	This allows any device to authenticate and then attempt to communicate with the access point. Any wireless device can authenticate with the access point, but if WEP is used, the device can communicate only if its WEP keys match the access point's. There is no challenge that occurs, you either have the correct key or not when you communicate with the access point. By eliminating the challenge process, it actually makes this more secure than shared key authentication.
PAP (Password Authentication Protocol)	A simple authentication protocol used with PPP (Point-to-Point Protocol). It is a plain text password system, which is not very secure.
Pathname	The location of a particular file or directory that includes the full path to the needed filename or directory. This is a combination of path and filename.
PEAP (Protected Extensible Authentication Protocol)	Authenticates clients into a network using only server-side certificates, which makes implementing and administering a wireless LAN easier.
Ping	A way to determine if a device is accessible. It sends a packet to the specified address and waits for a reply.
Protocol	This is the way two devices transmit data between each other, including error checking, data compression, and how messages start and end.

PSK (Pre-Shared Key)	Authentication mode of WPA used in SOHO environments. The key value (or pass-phrase) is used for network authentication only (not data encryption). It does not use a RADIUS server like the other modes, but uses a shared key to provide the initial authentication with the access point or host.
RADIUS (Remote Authentication Dial-In Server)	This is an authentication server, such as the Cisco® ACS, Microsoft® IAS, etc.
RARP or Reverse Address Resolution Protocol	One of the available boot methods. The device sends an RARP request and the RARP server responds with an IP address. The device knows its MAC address and the server responds with the IP address for it.
Relative Pathname	The file or directory location on the user's system relative to the user's current location on the system (what directory the user is currently in). For example, **mpcl toolbox\9855.phu**
Router	Any device that forwards data along networks. Routers are located at gateways.
Shared Authentication	The access point sends an unencrypted challenge text string to any device attempting to communicate with it. The device requesting authentication encrypts the challenge text and sends it back to the access point. If the challenge text is encrypted correctly, the access point allows the requesting device to authenticate. Both the unencrypted challenge and the encrypted challenge can be monitored; however, this leaves the access point open to attack. Because of this weakness, shared key authentication can be less secure than open authentication.
Signal Strength	A percentage (1 to 100) of the connection between the device and access point. If the signal strength is 0, there is no connection with the access point; 30 or less indicates you may be experiencing interference or close to being out of access point range, and below 50, printing performance could be affected. To improve the signal strength, try moving the printer closer to the access point and away from other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones.
Speed or Transmit Rate	Sets the maximum rate of communication between the devices on the network. It is also called transmit rate. The speeds are in megabits per second (Mbps) and include: 1, 2, 5.5, 11, 12, 18, 24, 36, 48, and 54.
SSID or Service Set Identifier	A unique identifier that must match for all nodes on a subnetwork to communicate with each other. It consists of up to 32 characters (any printable character, including spaces). If using the space character, it must be enclosed in quotation marks. It is case-sensitive.

Static Method	One of the available boot methods. Use static if your network uses fixed configuration. The IP address remains the same every time the device connects to the network.
Subnet	A portion of a network that shares a common address component. On TCP/IP networks, subnets are all devices with the same prefix. For example, all devices that start with 192.192.192 are part of the same subnet. Dividing a network into subnets is useful for both security and performance reasons.
Subnet Mask	A mask is used to determine what subnet an IP address belongs to. Companies often have ranges of IP addresses that can be described by one or more masks. For example, a mask of 255.255.255.0 allows variation in the last position only, because the first three positions are fixed.
Telnet	A Terminal Emulation program for TCP/IP networks that runs on your computer and connects your computer to a server on the network. You enter commands through the Telnet program and they run as if you were entering them directly on the server console.
TCP/IP	A way that two devices can transmit data between each other. TCP/IP (Transmission Control Protocol/ Internet Protocol) is generally the standard for transmitting data over a network.
TKIP (Temporal Key Integrity Protocol)	Changes the encryption keys regularly and has time limits before new keys are created. Changing the key periodically provides additional security.
TLS (Transport Layer Security)	A cryptographic protocol that uses client-side and server-side certificates to authenticate users on the Web. It can dynamically create user-based and session-based keys.
TTLS (Tunneled Transport Layer Security)	Provides certificate-based, server-side, mutual authentication of the client and network through an encrypted channel (or tunnel). It can dynamically create user-based and session-based keys.
Transmit Rate	See *Speed*.

WEP or Wired Equivalent Privacy	A security protocol for wireless local area networks. WEP was designed to provide the same level of security as that of a wired network, which is inherently more secure than a wireless network because wired networks are easily protected against unauthorized access. Wireless networks use radio waves to communicate and can be vulnerable to unauthorized users. WEP provides security by encrypting data over radio waves so that it is protected as it is transmitted. However, it has been found that WEP is not as secure as once believed. **Note:** If one part of a wireless network has WEP enabled, they all must have it enabled with the same key or they cannot communicate.
128 Bit / 64 Bit WEP Key	This is the 64 or 128 bit WEP key that must match other Nodes' encryption keys in order to communicate: 10 hex characters for 64 bit (40 user-specified characters), or 26 hex characters for 128 bit (104 user-specified characters). You must use the same key values for devices to communicate with each other.
WLAN or Wireless Local Area Network	A LAN that uses high-frequency radio waves to communicate between nodes, rather than telephone wires, etc.
WPA (Wi-Fi Protected Access)	A network security protocol that uses improved authentication and temporal keys. It was created to address the weaknesses of WEP encryption.
WPA2 (or IEEE 802.11i)	A network security protocol with stronger encryption than WPA. It was created to address the weaknesses of WEP encryption.

INDEX

A

address
  Gateway 2-1, 2-5
  IP 2-1, 2-3
  MAC 2-1, 2-2
  Subnet mask 2-4
alerts
  network 3-18, 3-19
AP density 2-11
authentication
  EAP-FAST 3-26
  LEAP 3-26
  PEAP 3-26
  PSK 3-26
  TLS 3-26
  TTLS 3-26
authentication type .. 3-15, 3-26

B

boot method 2-1, 2-6
BOOTP 2-6

C

certificates
  setup 3-17
channel
  wireless 2-13
command
  console 4-1
  general 4-6
  help 4-4
  Smart Relay 5-6
  SNMP 4-23
  TCPIP 4-20
  Telnet 4-1
  wireless 4-16
configuration
  label 1-9, 2-16
console commands 4-1

D

DHCP 2-6

E

EAP-FAST
  authentication 3-26
encryption mode 3-15, 3-25
  WPA 3-15, 3-25
  WPA2 ..... 3-15, 3-25

F

firmware
  update 3-24
front panel
  printer 3-20

G

general commands 4-6

H

help commands 4-4

L

label
  configuration 1-9, 2-16
  test 1-9, 2-16
LEAP
  authentication 3-26
LED
  operation 1-6, 1-7
login password 3-3

M

master
  printer 5-3
mode
  encryption.....3-15, 3-25
  wireless 2-10

N

network
  alerts.....3-18, 3-19
  protocols 1-3
  reset 3-8

O

operating
  system..... 1-3

P

partner
  printer 5-3
password 3-3
  changing..... 3-22
  setting 3-22
PEAP
  authentication 3-26
primary
  printer 5-3
printer
  front panel 3-20
  master 5-3
  partner 5-3
  primary 5-3
  settings 3-5, 3-6, 3-7
  slave 5-3
protocols 1-3
PSK
  authentication 3-26

R

RARP.....2-6
requirements
  system 1-2
reset
  network.....3-8

S

setting
  password 3-22
settings
  printer..... 3-5, 3-6, 3-7
  SNMP 3-12, 3-13
  SSID.....2-9
  TCPIP..... 3-10, 3-11
  WEP 3-16, 3-25
  wireless2-7, 2-8, 2-11, 2-12, 2-13, 3-14
setup
  certificates 3-17
  network3-10, 3-11, 3-12, 3-13
  printer..... 3-5, 3-6, 3-7
  WEP 3-16
  wireless 3-14
signal strength.....2-8
slave
  printer.....5-3
Smart Relay
  commands.....5-6
SNMP
  commands.....4-23
  settings..... 3-12, 3-13
SSID 2-9
Subnet mask 2-4
system
  operating.....1-3
  requirements 1-2

T

TCPIP
  commands 4-20
  settings 3-10, 3-11
Telnet
  commands 4-1, 4-4, 4-6, 4-16
test
  button 1-7
  label 1-9, 2-16
TFTP server 3-24
TLS
  authentication 3-26
transmit rate 2-12
TTLS
  authentication 3-26
type
  authentication 3-15, 3-26

U

update
  firmware 3-24

V

virtual display 3-20

W

WEP
  128 Bit 3-16
  64 Bit 3-16
  settings 3-16, 3-25
wireless
  AP density 2-11
  channel 2-13
  mode 2-10
  settings 2-7, 3-14
  signal strength 2-8
  SSID 2-9
  transmit rate 2-12
wireless commands 4-16
WPA
  encryption mode .. 3-15, 3-25
WPA2
  encryption mode .. 3-15, 3-25

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